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This model will handle the power of engines of larger displacement. However, it was specifically designed around the K&B .049. Its amazing power characteristics plus tremendous glide will win you many contests.

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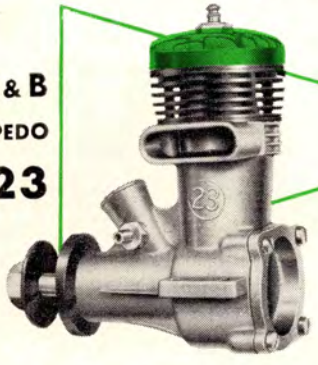
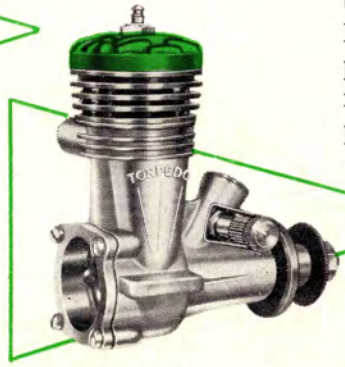


BORE .680 STROKE .620
DISPLACEMENT .225 Cu. In.

K&B TORPEDO .15



BORE .595 STROKE .535
DISPLACEMENT .149 Cu. In.

K&B TORPEDO .09

BORE .520 STROKE .464
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Cover: Ryan's high-speed, high altitude "Firebee" is the first turbojet pilotless plane designed for use as an aerial target. Painted by S. Calhoun Smith.

June, 1953 • Vol. 40, No. 3

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FROM THE READER

Plan Source . . . Have you a listing of currently available full-size Air Trails plans? You know what I mean—the actual working drawings so I can sit right down and start building.

Charles Stoll, Chicago, Ill.

• Official Air Trails plans are now available from Hobby Helpers, 770 Hunts Point Avenue, New York 59, N. Y. Send 6c in stamps for complete descriptive listing of about 100 different models—scale, F/F, jet, speed, rubber, Jetex, R/C, etc.

Flash from Author Green . . . Some hot information has just come to hand on the latest Russian jet bomber which refers to the caption on page 20 of the April issue and text on page 20 of the May issue, in my articles on the Russian Air Force. This is absolutely official and not open to any doubt whatsoever. The airplane we refer to as the "Type 35" is *not* that shown in our drawing of a shoulder-wing twin-jet bomber with straight wing and tail surfaces. The bomber that we illustrate and describe would seem to be an Ilyushin design of uncertain type number, but the "Type 35" is now known to be definitely a design by Andrei Tupolev, and an entirely different machine.

It is used by Soviet naval shore-based squadrons for shipping attacks and has a long slim fuselage and two axial flow turbojets. Like the earlier Ilyushin Il-28, the Tupolev "Type 35" has a straight wing but swept tailplane.

William Green, England

Who's a Frail! . . . Please supply the following books; ship cheapest way: 1 copy . . . Air Frails Model Animal, 1952. Kindly note these books are needed for export.

Book Promotions, New York, N. Y.

• Well, gang, this one really stopped us. We just ain't in the business of exporting frails (although we are accustomed to thinner, gals., dope, etc. and give full coverage to Bearcats, Panthers, Cougars, Bird Dogs, Beavers, etc.)

Those "New" Wakefield Rules . . . We have been swamped with inquiries regarding clarification of the new Wakefield rules. One publication misstated these rules and has probably caused all the confusion. However, the confusion does exist, and in the best interests of all, I would suggest that you print a clarification. . . . Many modelers feel that these new rules go into effect in 1953, and I feel sure that if you advise through your column or otherwise, everyone will have full knowledge of what the situation is.

E. G. Dolby, Ch'man, New England Wakefield Committee, Rockland, Mass.

• The "New" Wakefield rules do not go into effect until 1954. Last year's rules apply during 1953.

Short 'n' Sweet . . . The Model Annual is excellent.

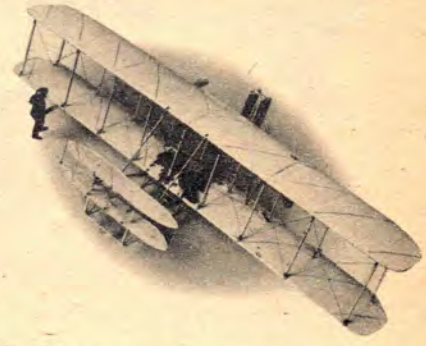
Rocky Cundiff, Los Angeles, Calif.

He Made the Famous Wright Model . . . Looking over my copy of "Air Trails Model Annual" for 1953, I was very interested in the article on the Wright Biplane, by Mr. H. A. Thomas. This is the second time you failed to give me credit for the same Wright model photo in your magazine. This model represents years of research in Wright flyers, and indeed most of the data on this model was given to me by Orville Wright himself.

I built this model back in 1937, and at present it is in the Institute of the Aeronautical Sciences in New York. I have been building exhibition models since 1917, and I'll admit a bit of pride in my attempts to preserve aeronautical truths.

This Wright model is made of over 3500 carefully made metal parts, some of which are silver soldered. Stainless steel and hard brass are the principal metals, and a double coating of specially treated silk is used for covering. (I hope to Heaven the ship is in a sealed glass case, as it was originally!)

It is mounted on a specially prepared base of plastic and sand taken from the exact spot from where the 1903 Wright Flyer took off. . . . On the model shown, over 1200 hours went into its building. One



hundred and twenty five hours per each went into the carving and detailing of the figures of Orville and Wilbur. I am at present doing further aeronautical research and model building as well as lofting certain parts of the B-47 jet bomber.

Christy C. Magrath, Berkeley, Mo.

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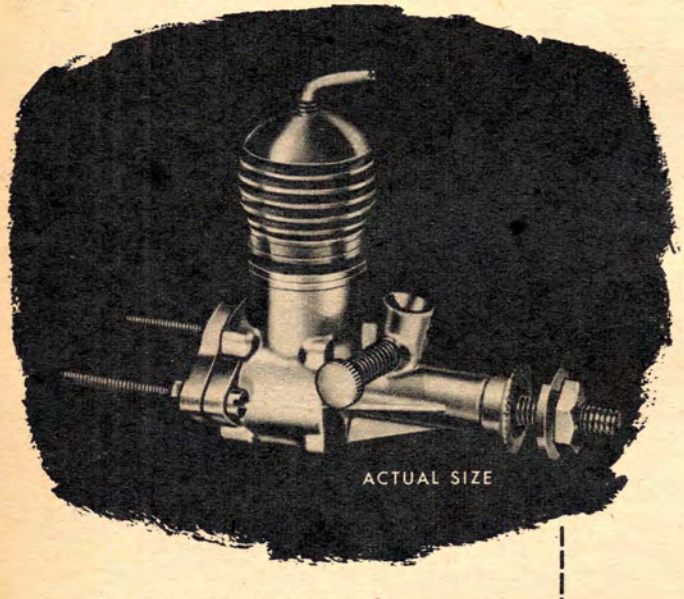

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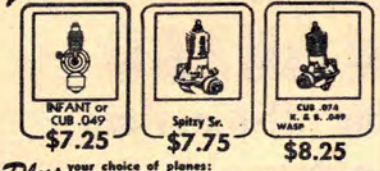

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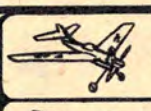

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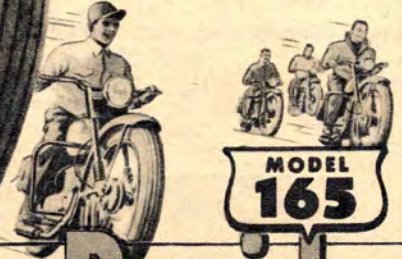

MODEL 165

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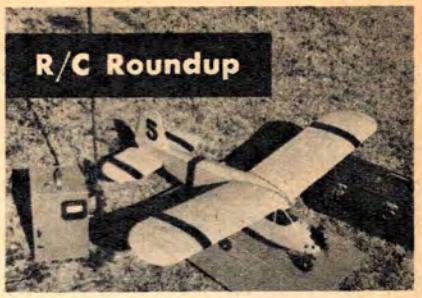


"Wee-bot" (2/3's Robot) by Callbie Wood. See copy for full description. Span came out to 44".

Now! Proportional "Fail-Safe" System

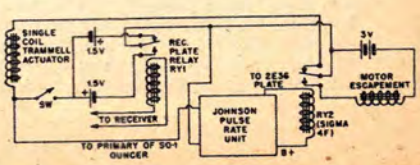
■ There has been much interested comment on the control system we showed here in the Feb. '53 issue. It covered a multi-control arrangement worked out by Claude McCullough and Jack Williams, and had the feature that if the signal were interrupted at any time, the rudder would center and the motor go into low speed (or cut off). Now we hear from John Beal of Warrington, Florida, who has what he feels is an even safer rig, since his will center the rudder and cut the motor with either no-signal or steady-signal. The latter situation can happen with some receivers and certain types of component failure (as we can sadly testify!) and also with interference.

John's "combinaton" looks like a very versatile setup. The basic control is rudder, which is operated à la Trammell, with a single coil actuator and two batteries. The receiver relay is RY1. As long as continuous pulses are received, the pulse rate unit (identical to that used by Paul Johnson and described in this Column, Dec. '52 issue) will leave relay RY2 in the open position, as we show it here. This completes the rudder circuit, and rudder control is maintained normally. When it is desired to work the motor escapement, the carrier is either broken or held solid for a moment, allowing the escapement to move one position. While it is moving, the rudder circuit is broken by RY2 and the rudder centers. Renewed pulsing cuts off the pulse rate tube, opens relay RY2, and you are back to rudder operation again.

Since either *no* signal or *solid* signal centers the rudder and changes motor speed, system failures giving either of these conditions will not cause a spin-in. If you are using a Bonner-style motor escapement of the type that has a valve on the armature, either a solid-signal or no-signal, if the condition persisted, would hold down motor speed or stop it, even if the trouble occurred when the motor had been in the low speed position. This is a neat and simple rig, and removes one of the main drawbacks of proportional control, besides giving you motor control.

Clubs and Contests. Leland Reiswig sends results of an R/C contest at Crows Landing Naval Air Station, near San Francisco. Some interference was had from a local emergency radio beam, and

(*Continued on page 71*)



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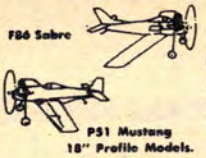

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Plymouth Presents the Seventh International Model Plane

Here are the events:

FRESHMAN DIVISION

FREE FLIGHT—Outdoor Rubber and Hand-Launched Glider

CONTROL LINE—Freshman Speed and Freshman Stunt

JUNIOR DIVISION

FREE FLIGHT—Outdoor Rubber, Hand-Launched Glider, Class 1/2A Gas, Class A Gas and Class BC Gas

CONTROL LINE—Class A Speed, Class B Speed, Class C Speed, Jet Speed, Class ABC Stunt, Class ABC Combat and Class ABC Scale

SENIOR DIVISION

FREE FLIGHT—Outdoor Rubber, Hand-Launched Glider, Class 1/2A Gas, Class A Gas and Class BC Gas

CONTROL LINE—Class A Speed, Class B Speed, Class C Speed, Jet Speed, Class ABC Stunt, Class ABC Combat and Class ABC Scale

LEADER DIVISION

FREE FLIGHT—Outdoor Rubber, Hand-Launched Glider, Class 1/2A Gas, Class A Gas and Class BC Gas

CONTROL LINE—Class A Speed, Class B Speed, Class C Speed, Jet Speed, Class ABC Stunt, Class ABC Combat and Class ABC Scale

JUNIOR-SENIOR-LEADER COMBINED

CONTROL LINE—Class B Team Racing and Class ABC Carrier Deck

RADIO CONTROL—All classes combined

How you can qualify:

Applications may only be made on the Official Entry Blank. Times and points entered in the entry blank must have been made between Jan. 1, 1953, and July 27, 1953. These records must have been made in a contest officially sanctioned by the Academy of Model Aeronautics, and must be verified by the Leader Member listed by the AMA as Director of the contest. Special preference will be given to the scores of applicants who have won high-point or sweepstakes awards in model plane contests sponsored or co-sponsored by a Plymouth dealer or group of Plymouth dealers.

Only one entry blank will be honored from each applicant. It must be completed in detail as required for the Division in which the applicant hopes to compete. Applications must be postmarked not later than midnight, July 27, 1953.

Quotas of contestants will be selected from each state to conform roughly with the number of congressional representatives, except no quota will be less than four and may be greater if the number of model flyers in any state warrants such a change. Selections will be made on the basis of the applicants' ability to enter and win several different types of events. Selections will be designed to spread contestants evenly through the age divisions and the various events in the International Model Plane Contest.

A Youth Activity Sponsored by

CONTEST *in Detroit—August 19-24*

Classification of Contestants:

Each contestant must indicate on his application which of the four competitive divisions he wishes to enter. He must submit proof of his qualifications for that division on his application blank (all ages as of July 1, 1953).

FRESHMAN DIVISION: To qualify as a Freshman, an applicant must be at least eight years of age, but not yet sixteen. He must be a beginner member of a Plymouth Aero League model club on record at PAL headquarters. Before flying in the Seventh International Contest, he may not have competed in more than one sanctioned contest. He must be recommended by his club's instructor and the recommendation must be countersigned by his club's sponsoring Plymouth dealer. There will not be more than 100 Freshman contestants.

JUNIOR DIVISION: To qualify as a Junior, an applicant must be at least eight years of age, but not yet sixteen. He will be governed by all applicable regulations of the Academy of Model Aeronautics as set forth in the rule book. He must be a member of the AMA in good standing and prove his claim for invitation by his record in not more than three sanctioned contests.

SENIOR DIVISION: To qualify as a Senior, an applicant must be at least sixteen years of age, but not yet twenty-one. Other provisions same as for the Junior Division.

LEADER DIVISION: To qualify as a Leader, an applicant must be at least twenty-one years of age. All other provisions governing Junior and Senior Divisions apply. In addition, a Leader must have been active in the Plymouth Aero League as an instructor, leader or adviser of a PAL Club on record at PAL headquarters. He must be recommended by the dealer sponsoring his club. There will not be more than 100 Leader contestants.

Here are the prizes:

In each Junior, Senior and Leader event, trophies will be given to the first three winners, with medals going for fourth and fifth places. In addition, there will be five cash awards in each of these events. Grand championships will be recognized in each division. Freshmen will also compete for trophy and medal awards in each Freshman event. The three high-point winners will receive miniature trophies.

ALL ENTRIES CLOSE AT MIDNIGHT, JULY 27, 1953

Official entry blanks and rule books available at hobby shops and Plymouth dealers approximately May 1.

PLYMOUTH WILL PLAY HOST AND PAY FOR EACH INVITED CONTESTANT'S HOTEL ACCOMMODATIONS AND MEALS WHILE HE IS IN DETROIT DURING THE CONTEST.

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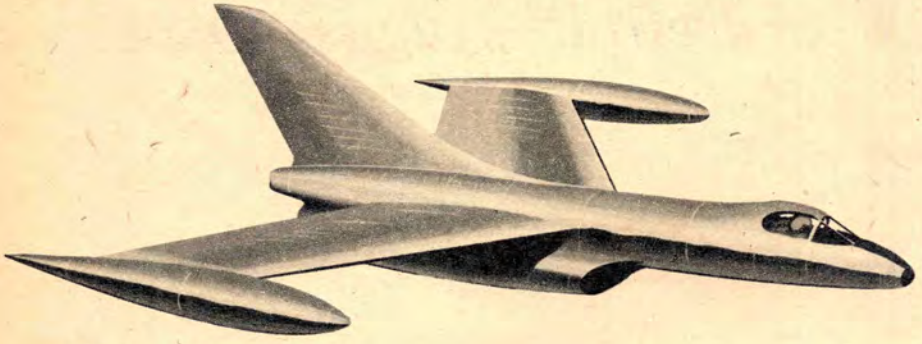
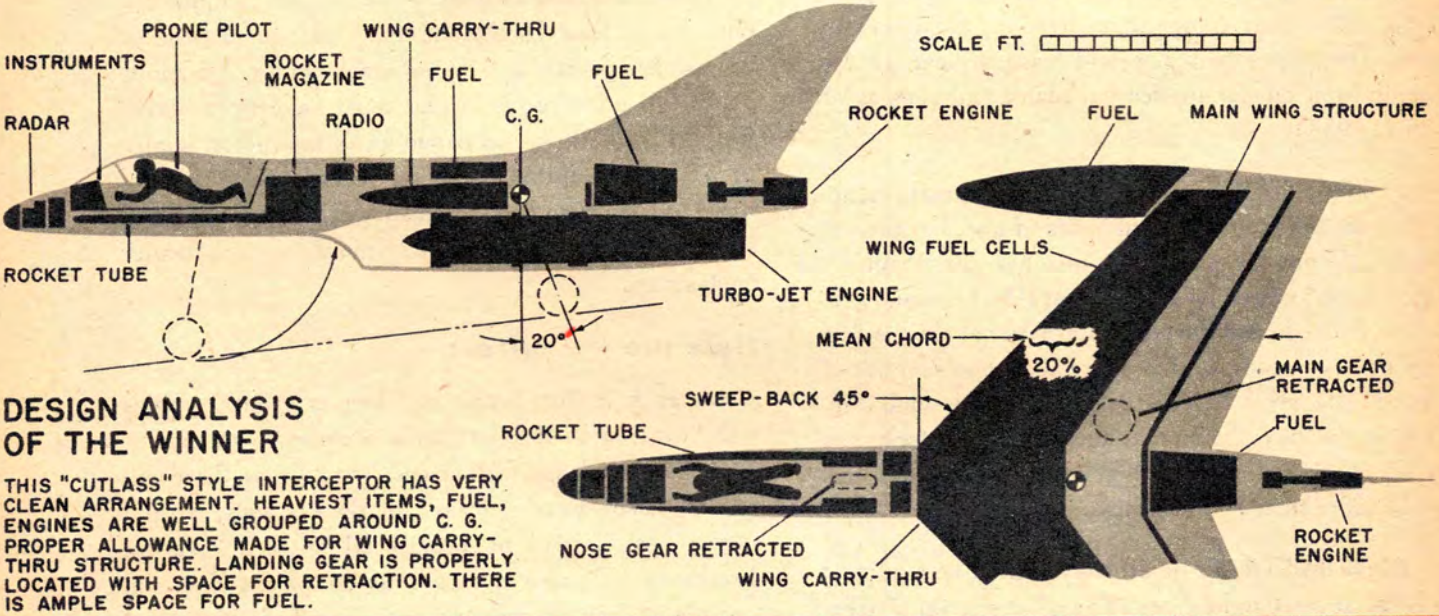


1ST Prize-Winning Design

All-weather interceptor, capable of supersonic speed, by Tim Vanecek of Granger, Texas. Design has been broken down and analyzed by "AT" technical staff to indicate some of the basic requirements necessary to win. Plane carries twelve 2.75 in. rockets internally stowed. Pilot lies prone, which gives him a higher "G" tolerance when maneuvering at high speed. Two 10,000 lb. thrust jets and one rocket.

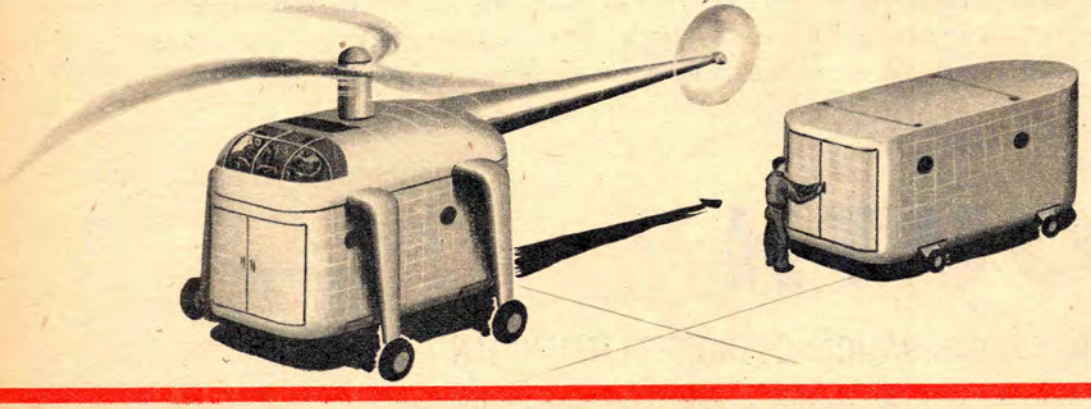


DESIGN ANALYSIS OF THE WINNER

THIS "CUTLASS" STYLE INTERCEPTOR HAS VERY CLEAN ARRANGEMENT. HEAVIEST ITEMS, FUEL, ENGINES ARE WELL GROUPED AROUND C. G. PROPER ALLOWANCE MADE FOR WING CARRY-THRU STRUCTURE. LANDING GEAR IS PROPERLY LOCATED WITH SPACE FOR RETRACTION. THERE IS AMPLE SPACE FOR FUEL.

2ND

Cargo and passenger transport helicopter with detachable pod looks like lumber yard loader.



This interesting design was submitted by 15-year-old Allen Kuhn, student of Inglewood (Calif.) High School. The general idea is similar to the Hughes XH-17 load lifter. Detachable pod can carry eight passengers or 2285 lbs. of cargo. When the helicopter discharges its cargo at destination, another loaded pod can be attached to it and flown to another point. The 'copter is powered by a 600 hp engine, which seems a trifle low for this type of craft; should be at least 900 lbs.

Rules governing the "aircraft of the future" competition are as follows: Three-view sketches of the proposed aircraft will be required. These should be not less than 8½x11 inches for the entire three views. Give sketches of the complete airplane in three-quarter front and rear positions. Photos of a model of proposed design may be included. Information on the powerplant(s), estimated performance, dimensions, and explanations of any unusual features are required. Data as to age, occupation or schooling of the entrant will be welcomed by the editors and judges. The design may be of any type: commercial aircraft, military planes (fighters, bombers, troop transports), planes for the private flyer and single-engine sporting or racing craft. The entry each month judged the most practical or of the greatest significance will receive an award of $25. Payment of $5 will go to runners-up. Entries will not be returned and for that reason those participating should keep copies of all material submitted. Mail entries to Airmen of Vision, c/o Air Trails, 304 E. 45th St., New York 17, N. Y. Editors regret that due to large number of entries they cannot enter into any correspondence on Airmen of Vision.

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'Copters in News; Gyrodyne Flies

GYRODYNE GCA-2 coaxial heliocopter (above) passed flight tests at St. James, Long Island. Five-passenger craft originally was designed by Bendix, purchased by Gyrodyne Co. of America. Powered by 450 hp Pratt & Whitney engine . . . BELL XHSL-1, first helicopter specifically for anti-submarine warfare, made maiden flight at Bell's Fort Worth plant. Power is 2400 hp Pratt & Whitney engine operating fore and aft rotors. Blades fold for compact stowage.

★ ★ ★

FIVE USAF operational airplanes can carry atom bomb: Convair B-36, Boeing B-47, North American B-45 Tornado, Boeing B-50 Superfortress, and a fighter, Republic's F-84G Thunderjet . . . F2H-2P McDonnell Banshee photographic jet plane from Navy Photo Squadron VC-61 established high-altitude photo record when it "shot" San Diego Bay from 54,650 ft. . . . UNITED AIRLINES have on order 55 new Convair 340 twin-engine airliners. The 44-passenger transports are larger, faster and heavier edition of the famous 240. . . . FAIRCHILD at Hagerstown, Md., to build outer wing panels and vertical fins for the Boeing B-52 eight jet bomber. . . . FIRST turbo-compound engine-powered Lockheed R7V-1 Super Constellation delivered to U. S. Navy. To go into service with Fleet Logistics Air Wing, capacity is 106 passengers.

★ ★ ★

AVERAGE USAF jet fighter pilot on combat tour in Korea fired more than 180,000 rounds of .50 caliber ammunition, dropped 220 tons of bombs, shot 350 aircraft rockets, splashed 2500 gals. napalm during 100 missions. . . . NAVY'S Douglas F3D Skynights showed worth in combat when two of the twin-jet night fighters shot down a pair of MiGs. Another Navy airplane with a respectable bag of Red jet fighters to its credit: Grumman F9F Panther. . . . F-51 MUSTANGS retired from combat duties in Korea. North American produced nine different models of the famous fighter, turned out 15,367 at $17,200 per airframe. The F-51 also to be replaced by jets in National Guard and Reserves.

(*Continued on page* 16)

New French SO.9000 Trident

Leadership in ½A... yours with Thimble Drome

Today's Most Advanced ½A Engines, Fuels, Reels, Accessories.

Ask your model sports dealer for the COMPLETE line that is leading the way in ½A design, engineering, performance, and **convenience for the modeler.**

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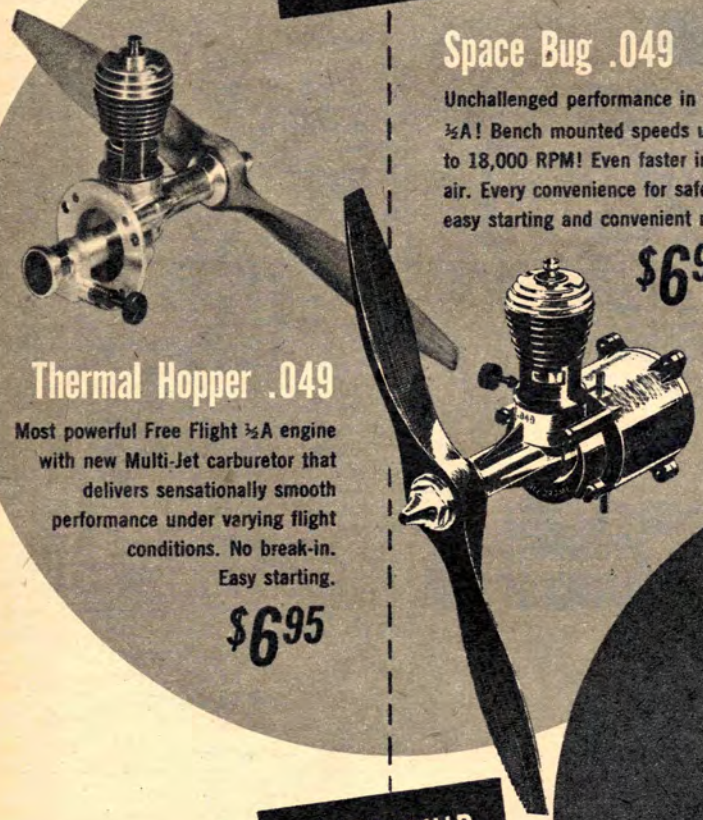

Space Bug .049

Unchallenged performance in ½A! Bench mounted speeds up to 18,000 RPM! Even faster in the air. Every convenience for safe easy starting and convenient mounting.

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Thermal Hopper .049

Most powerful Free Flight ½A engine with new Multi-Jet carburetor that delivers sensationally smooth performance under varying flight conditions. No break-in. Easy starting.

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SKYLON REEL—new Thimble-Drome reel for use with Nylon lines in ½A. Spools turn independently for adjusting control, wind in simultaneously!

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HANDY REEL—Takes any size flying wire, either stranded or solid. Low cost lets you have a separate reel for each size of line used.

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25¢

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L. M. COX Manufacturing Co., Inc.

SANTA ANA, CALIFORNIA

Radio Control NOTES from Tornado

VALUABLE TIPS

For the beginner making his first attempt at Radio Control flying and those not too familiar with engine and prop combinations.

Using any 48 to 54 inch span—wing loading up to 16 oz. per sq. ft.

ENGINES: OK CUB .099, on this engine it is necessary to reduce the venturi opening by 50 per cent. This will allow better fuel adjustment for hand launching and violent maneuvers. Set needle on rich side of peak so that in climb engine is fully at peak RPM. ARDEN 099 works well as is.

Right thrust your engine 2° to 3°—this has been found ideal.

PROPS

FIRST TEST FLIGHT and LOW ALTITUDE FLYING—Use TORNADO R.C. 10 in. dia., 2 in. pitch. This gives a flying speed of 14 mph, 100 ft. altitude gain per min.
MANEUVERS and MILD STUNTS—Use TORNADO PLASTICOTE 9 in. dia., 3 in. pitch. This will give a speed of 18 mph, altitude gain 350 ft. per min.
HIGH ALTITUDE and VIOLENT MANEUVERS—Use TORNADO PLASTICOTE 9 in. dia, 4 in. pitch . . . for speed of 20 mph, altitude gain 350 ft. per min.
All speeds and altitude gains are approximate, depending upon engine condition, fuel, wing loading. The use of 1 oz. Castor Oil per pint of packaged fuels is advised to offset extra engine load of large diameter props. Use HOT Glo Plugs.
R. C. PROPS 10 in. dia, 2-3-4 in. pitch, 0.35c ea.
Plasticote Props 9 in. dia, 3-4-5-6-7 in. pitch 0.25c ea.

TORNADO PROPS ARE ALWAYS AVAILABLE AT YOUR DEALER.

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AIR NOTES

(*Continued from page 14*)

STRATEGIC AIR COMMAND interested in sports car racing. In cooperation with the Sports Car Club of America, two highly successful and very well received events were run at Turner AFB, Albany, Ga., and McDill AFB, Tampa, Fla. Schedule calls for more: July 5, Offutt AFB, Omaha; Aug 9, Lockbourne AFB, Columbus, Ohio; October 25, Turner AFB; November 8, March AFB, Riverside Calif. Substantial revenue from races helps finance service clubs and hobby activities of bases. S.A.C. Boss Gen. Curtis LeMay is ardent sports car fan, owns an English Allard.

★ ★ ★

LINE-UP for London to Australia air races starting October 8th is impressive. In speed category two Canberras entered by Royal Australian Air Force, RAF will fly three photo recon Canberras and one Vickers Valiant jet bomber; Royal Danish AF entered an F-84G Thunderjet, with air-to-air refueling equipment. C. H. "Slick" Goodlin, colorful author of "AT" articles, will fly a de Havilland Hornet; another U. S. entry is an F-82 Twin Mustang. Three independent Australian pilots will compete with two de Havilland Mosquitoes and Australian-built Mustang. Most interesting entry in transport category will be the Custer Channel Wing CCW-5 Executive based on Bauman Brigadier design; Rausch Aviation of Teterboro, N. J., has entered a Lockheed Loadstar. Prize money is $28,000, $8,400, $2,800 and $1,400 for first four in each section.

★ ★ ★

MOONEY AIRCRAFT INC., builders of the single-seater Mooney Mite, often referred to as the "poor man's Mustang," moved from Wichita, Kans. to Kerville, Tex. . . . FRENCH airline, Union Aeromaritime de Transport, accepted delivery of a de Havilland Comet jet liner.

★ ★ ★

PICTURED bottom this page: propeller designed by Hamilton Standard for Pratt & Whitney T-34 turboprop engine (Air Notes, May issue). Has widest blades ever built. Suitable for engines from 5000 to 10,000 hp.

★ ★ ★

NAVY HUP-2 helicopter set unofficial altitude record of 16,150 ft. during routine training flight at Ream Field, Calif. . . . MIDGET RACING plane enthusiasts can now purchase kits for construction of the tiny speedsters. Plane is version of famous Long Midget. Kit for $1200 minus engine, or finished plane $4000, from Midget Aircraft Sales & Service. —*A.D.*

ATTENTION RADIO CONTROL FANS!

Here's the newest star in the R/C model field

GUILLOW'S Trixter BEAM

$6.95

COMPLETE LESS WHEELS, LIQUIDS, RECEIVER AND MOTOR UNIT

FOR BOTH 465MC AND 27.255MC "Examination Free" FREQUENCIES

Designed and tested by Lou Andrews - - -

After a solid year of design and testing, the Trixter Beam is now ready to thrill you with its top performance and stability.

It has successfully undergone a series of tests that prove it can easily handle the full equipment of the MacNabb 465 receiver, Bonner compound escapement and motor control units. In addition there is plenty of fuselage space for all radio gear plus working room for your hands.

Completely prefabricated, the BEAM boasts such outstanding features as tricycle landing gear, removable escapement, receiver and motor units and exceptionally graceful lines reminiscent of the Aeronca Champion.

The BEAM is an excellent free flight sport flyer that can be flown without radio controls. Visit your dealer today and examine this new Guillow Kit — you will be pleasantly surprised with one of the top values of the year.

SPECIFICATIONS

Wing Span	50.25"
Wing Chord	8.25"
Effective Area	372"
Body Length	35.25"
Flying Weight	36.5 oz.
Wing Loading	14-16 oz.
Power	.09 to .14
Category	Radio & Sport
Ability	Contest & Trainer

KIT FEATURES

Full size plan sheet. Accurate die cut parts. Formed landing gears. Necessary hardware pkg. Two colors of covering. Celluloid for windows.

Boys! SEE YOUR LOCAL DEALER FOR GUILLOW KITS - IF NOT AVAILABLE, SEND DIRECT TO FACTORY. ADDING 15¢ TO ALL MAIL ORDERS

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AVIATION INDUSTRY needs TRAINED MEN
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AVIATION

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CAREER

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What better recommendation could a school have?

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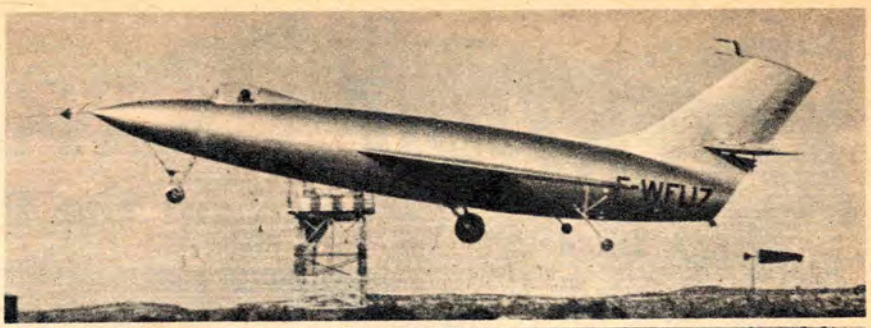
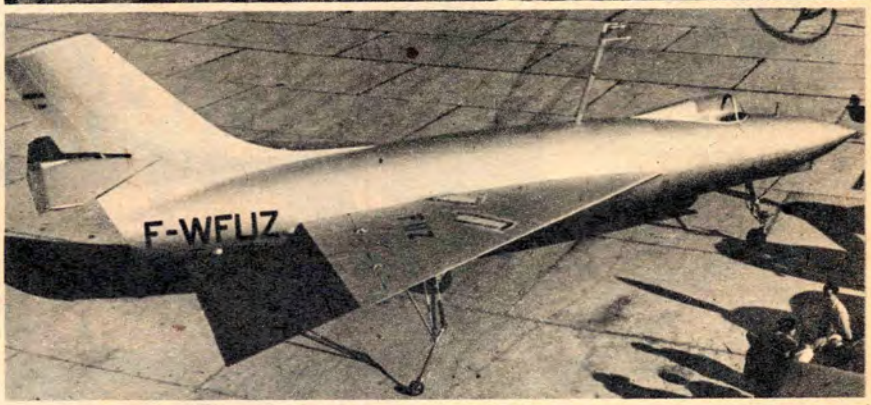
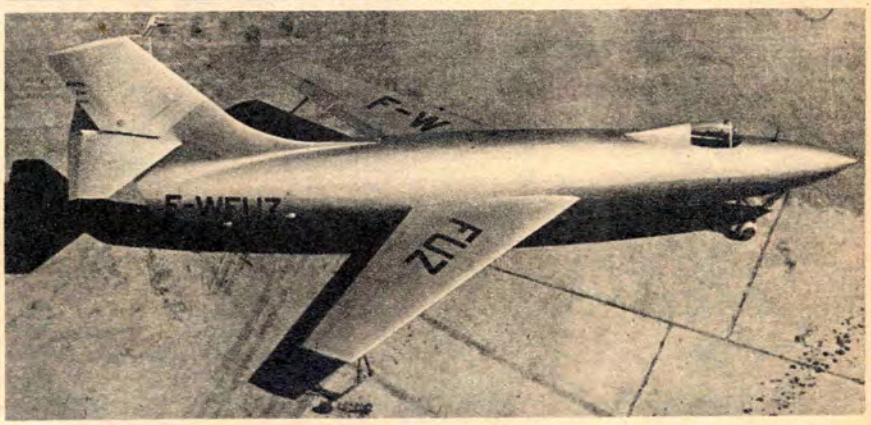
CITY _____ ZONE _____ STATE _____

High School Attended _____ Graduated Yes ☐ No ☐

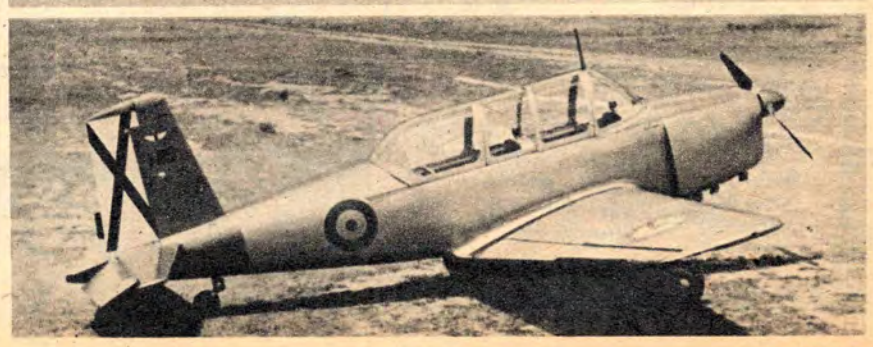
AT 6 Check one: ☐ Veteran ☐ Non-Veteran







WORLD A-WING Photos above show French S.F.E.C.M.A.S. glider built to test supersonic wing shapes. Fuselage is full-scale model of proposed jet fighter. Wings tested on fuselage are 45 deg. swept-back shape or full delta. Glider is towed to altitude of 16,400 ft. and released. Measurements are taken in free flight glide. Directly below: The C-46 in flight with both engines stopped and propellers feathered is being pushed along by an 880 lb. thrust Marbore II auxiliary jet suspended below fuselage. Actually, at 15,000 ft., the C-46 with the jet running is descending at a rate of 460 ft./sec. Jet engine is used for thrust augmentation on take-off, allowing plane to get off with a greater load. Bottom: latest Spanish training plane, the I-115 of all-wood construction, powered by a 150 hp, inverted 4-cylinder Elizalde Tigre engine.



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...plus easier starting, cooler operation carbon-free combustion with

Cheminized O&R fuel

Whatever number your engine calls for — Cheminized O & R No. 1, 2, 3, 4, or AA — your No. 1 choice for efficiency and performance is the "power of the hour" — Cheminized O & R!

The fuel with the difference you can see

Pint 85¢
Quart $1.60

Cheminizing **— do YOU know what it means?**

The original organization which made Ohlsson & Rice (O & R) products so popular with modelers for nearly twenty years—now known as Cheminol Corporation—is engaged on a far-reaching program of modernization and growth. New products are being designed. New plants constructed on both East and West Coasts.

Cheminizing means this O & R "program of progress" under the banner of Cheminol Corporation. Cheminized O & R products are made by the same O & R trained craftsmen as in the past, but each has been given a new value in quality and performance. You can depend on up-to-date performance where you see the line — "It's Cheminized"!

Cheminol Corporation

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IN CANADA: CANADIAN HOBBYCRAFT
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SCORES AGAIN!

THE VECO Smoothie

FULL STUNT CONTROLINE CONTEST MODEL

THE ULTIMATE IN PRECISION STUNT FLYING!

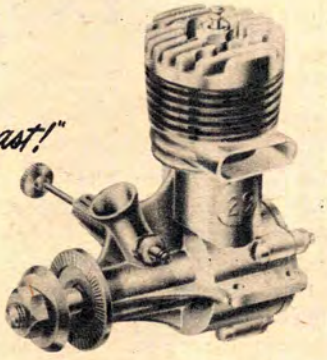
Now you may have it, in "easy to build, easy to fly" prefab kit form—the widely recognized, spectacular "Smoothie Stunter" designed by "one of the world's top-ranking stunt designers," Veteran Veco Designer Bob "Smoothie" Palmer. It's big, it's fast, it's a winner! Instant control response, a thrill to fly and stunt. Quality precision parts, simplified assembly. Wing span 52", Wing area 501 sq. in. including flaps. For engines .29 to .35 displacement. Finished weight approximately 32 ounces.

Buy a kit—power it with the unsurpassed..

VECO "29" OR "31" GLOW PLUG ENGINE

"The Champions Boast from Coast to Coast!"

"Powerhouse thrust" with "fuel-miser" consumption, for either controline or freeflight, gives you maximum power and saves you money on fuel. Finest precision engineered parts and workmanship assure dependability and top performance always.



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Planes • Engines
Propellers • Wheels
Accessories

CIVIL AIR PATROL
USAF AUXILIARY

Cadet Encampments at Air Force Bases Up 20% for '53

CAP Encampments. Nearly 7,000 Civil Air Patrol Cadets are expected to turn out for the annual summer encampments to be held during June, July and August at Air Force bases throughout the United States and territories.

Forty-four bases in ten major Air Force commands will play host to the teen-age Cadets who will be furthering their Civil Air Patrol aviation education through participation in the nine-day encampments. Last year's attendance figure is expected to be increased by nearly 20 percent.

The encampments provide CAP Cadets with first-hand information on Air Force operations and activities. Male and female members will attend the sessions jointly. A special all-girl encampment is scheduled for Lackland AFB, Texas.

Following is the slate of bases and the CAP wings which will be combining forces to sponsor the 1953 summer encampments:

Alaskan Air Command: Elmendorf Air Force Base—Alaska Wing.

Air Defense Command: Grenier Air Force Base—Maine, New Hampshire and Vermont Wings. McChord Air Force Base—Washington Wing. Otis Air Force Base—Connecticut and Rhode Island Wings. Portland International Airport—Oregon Wing. Selfridge Air Force Base—Michigan Wing. Stewart Air Force Base—New York Wing.

Air Materiel Command: Hill Air Force Base—Utah Wing. Olmsted Air Force Base—Pennsylvania Wing. Tinker Air Force Base—Oklahoma Wing. Wright-Patterson Air Force Base—Kentucky and Ohio Wings.

Air Research and Development Command: Griffiss Air Force Base—New York Wing. Kirtland Air Force Base—New Mexico Wing.

Air Training Command: Amarillo Air Force Base—Texas Wing. Chanute Air Force Base—Wisconsin Wing, and Illinois Wing. Goodfellow Air Force Base—Texas Wing. Keesler Air Force Base—Mississippi Wing.

(*Continued on page* 64)

Hillman Flying Service's Wesley V. Hillman of Roanoke, Va., presents Cadet Commandant Capt. Louise M. Thaden, CAP, with flight scholarship which will go to best Roanoke Sq. Cadet.

"AERO GLOSS finished? Of course!"

A Champion's Ship wins a Championship

*Aero Gloss Finished Planes Sweep First Place Appearance Awards at Nationals...

1950...Howard Thombs
1951..... Don Still
1952..... John Tatone
1953..... YOU?

Winning the Testor Perpetual Trophy for *Model appearance* at the 1952 Nationals was a proud moment for John Tatone, of San Francisco! He was proud of the *lasting*, high-gloss finish that is resistant to *All* hot fuels, and mirrored the perfection of the beautiful model he had built.

When *you* are getting ready for the Nationals—this year—remember to give *your* plane that "better chance" with AERO GLOSS! You'll say—like Johnny: "It's the easiest spreading hot fuel proof dope I ever used! It's mirror-like quality gives you a finish that's out of this world!"

4 ounce jar
60¢

Full 1 ounce
20¢

Let these Aero Gloss Features help you join the Family of Famous Folks!

- **A true airplane dope**—with binding and stretching qualities that add strength to your model.
- **Really hot fuel proof**—eliminates extra time-consuming separate coats to make your model fuel proof.
- **Binds to surface**—will not crack or peel, adding durability and long life to your finishing job.
- **Readily and quickly patchable**—saves time when unforseen accidents mar the surface.
- **Smooth, high gloss**—gives high-speed, no-resistance air-flow with brush or spray gun.
- Used by more champions than any other model airplane dope.

AERO GLOSS . . . THE COMPLETE HOT FUEL PROOF LINE . . .

When you **build** with **Aero Gloss** you **fly** with confidence . . . your plane is fuel proof throughout—from cement to final coat! Tested and recommended by leading model kit manufacturers.

Aero Gloss	Hot Fuel Proof PLASTIC BALSA	in handy tubes
Aero Gloss	Hot Fuel Proof C-77 CEMENT	
Aero Gloss	Hot Fuel Proof MODEL AIRPLANE DOPE	
. . . and now the NEW:		
Aero Gloss	Hot Fuel Proof TRANSPARENT COLORS	in glass jars
Aero Gloss	Hot Fuel Proof METALLIC COLORS	

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The pint size can is the economical way...

Clear $1.50
Thinner . . . $1.25
Balsa Fillercoat . . . $1.69

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It's the size of the FIGHT in the man!

That's right! In the U. S. Air Force, it's not the size of the man in the fight—it's the size of the FIGHT IN THE MAN! And Aviation Cadets *must* have plenty of it. For Cadet training is rugged. If you're good enough . . . tough enough . . . smart enough . . . if you can take it while you're learning to dish it out, you can have one of the most fascinating careers in the world. You'll be equipped to fly the latest, hottest planes. You'll be prepared to take your position as an executive, both in military and commercial aviation as well as in industry. And while you're helping yourself you'll be helping your country.

WIN YOUR WINGS! It takes only a little over a year to win your wings as a Pilot or Aircraft Observer (Navigator, Bombardier, Radar Operator or Aircraft Performance Engineer). But at the end of your training you graduate as a 2nd Lieutenant in the Air Force, with pay of $5,300.00 a year.

ARE YOU ELIGIBLE? To qualify as an Aviation Cadet, you must have completed *at least* two years of college. In addition, you must be between 19 and 26½ years, unmarried, and in good physical condition.

New Aviation Cadet Training Classes Begin Every Few Weeks!

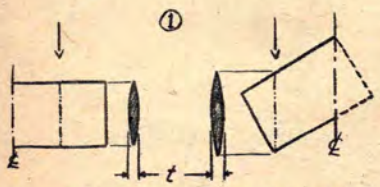
HERE'S WHAT TO DO:

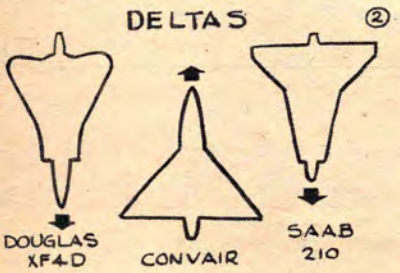
1. Take a transcript of your college credits and a copy of your birth certificate to your nearest Air Force Base or Recruiting Station. Fill out the application they give you.
2. If application is accepted, the Air Force will give you a physical examination.
3. Next, you take a written and manual aptitude test.
4. If you pass your physical and other tests, you will be scheduled for an Aviation Cadet training class. The Selective Service Act allows you a four-month deferment while waiting class assignment.

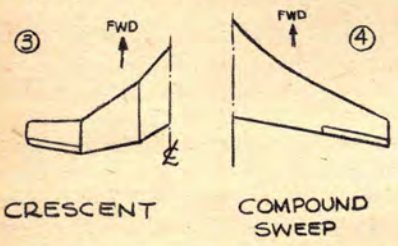
WHERE TO GET MORE DETAILS: Visit your nearest Air Force Base or Air Force Recruiting Officer. Or write to: Aviation Cadet, Headquarters, U. S. Air Force, Washington 25, D.C.

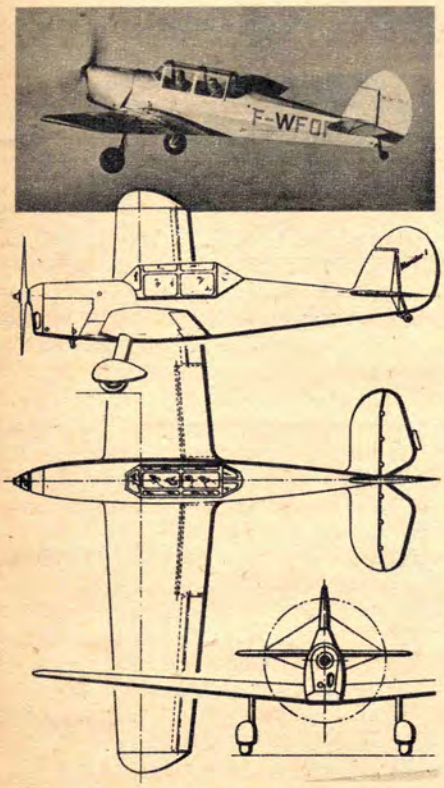
U.S. AIR FORCE

Air FORECAST and REVIEW









Farman Monitor I, French two-place, light aerobatic trainer. Powered by 140 hp 4-cyl. Renault. Span is 40 ft., length 22 ft. 3 in., 143 mph.

Douglas F4D Skyray is supersonic fighter, says Navy. . . . Convair R3Y turboprop flying boat (ex XP5Y-1) is named Tradewind. . . . Northrop will be next design team to sponsor delta-wing fighter with transonic speed. . . . End of a decade: Boeing delivered Superfort No. 4,250, a TB-50H, to AF. Plane was last of the line. . . . Machine guns and cannon face tough competition from unguided rockets in fighter armament, may be dropped completely in new designs. . . . Boeing F-99 Bomarc is said to be USAF's first pilotless fighter.

Tomorrow's Fighter: Trident, new French rocket-powered interceptor. France has always built toward light-weight interceptors. Reason: It's a small country; you don't have to fly large distances and so need less fuel. Thus, a smaller, lighter plane. Tiny Trident has short-span straight wings, tip-mounting Turbomeca Marbore II jets. Prime mover: a 9,000-lb. thrust rocket engine in fuselage tail. Expected top speed is Mach 1.5. After rocket burnout, pilot cruises home on tipjets, lands light because most weight was rocket fuel. Light landings mean cheap fields.

Trident is SNCASO product, designated SO 9000. First flight was set for early spring. Construction is simple, cheap, aimed at high production. Horizontal tail has negative dihedral. Personal comment: Design owes much to Douglas Skyrocket. We'll be surprised if plane gets beyond prototype construction.

Speaking of Wing Layouts, let's look at some of the latest (left). You can take a straight wing and sweep it back (1), getting a thinner section (lower thickness-chord ratio). But landing lifts are low, wings drop in high-speed stalls, controls don't hold solid at high angles. So here are the alternatives:

Delta Wings are triangular or nearly so (2). You get a large wing which can be physically thick and aerodynamically thin. From the big wing comes low wing loading; from the thin wing, low drag. From aerodynamic tricks, you get good landing lifts at reasonable angles, good stall characteristics, solid controls.

Crescent Wings are built with sweep which decreases toward the tip (3). The tip can be built thin (the loads are small there) and the ailerons can be conventional (the tip is an old-fashioned straight wing). Sweep is at the root where you need it most. Twist from aileron action is minimized because loads are applied close to load-carrying beams.

Compound-sweep Wings are crescent-swept hybrids. Leading edge varies in sweep angle but the trailing edge doesn't (4).

Status Report: Jet Transports. Coming up is aviation's biggest battle royal. On the card: Boeing, Douglas, Lockheed and maybe Convair in the U.S. vs. Vickers, Avro and Handley Page in England. The prize: export sales of jet transports. On our side is what the industry loves to call "American know-how" (translation: best sales pitch); on the British side, operating experience and troubles with the world's only current jet transport, the Comet.

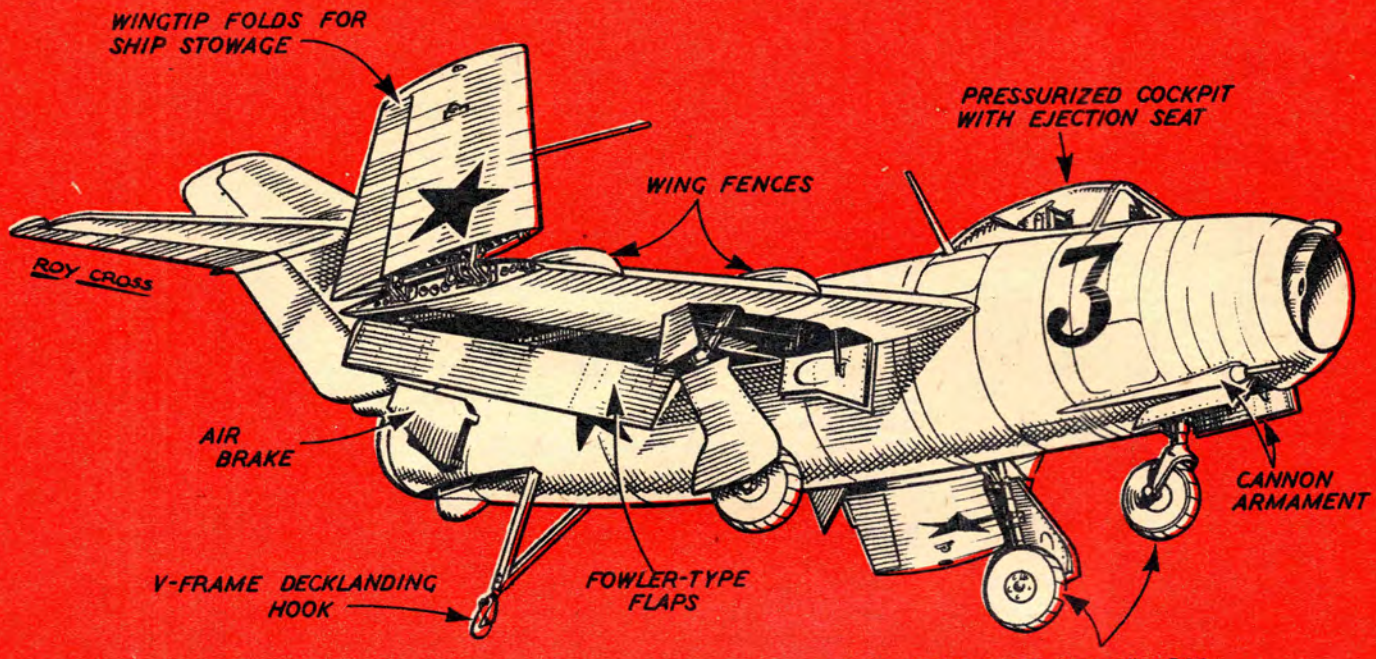
Prediction: Boeing will roll out first in this country, with Lockheed and Douglas following. Convair could leap in anytime, and will if there's a good return possible. No design specs right now, but they'll all look familiar. Boeing's will be a hybrid B-47 and Stratocruiser; Lockheed's design, a big F-90 with underslung engines. Douglas will build a DC-6 with swept or crescent wings.

Avro is wedded to the delta, Vickers to the compound sweep and Handley Page to the crescent. These British ideas may prove future's best wing shape.

End of the Road? There is a chance the turboprop engine is dying. In this country, it was first spurned in favor of compounded piston engines, then kicked aside because of the pure jet demands of the Korean war, then plagued by gearbox troubles. Now new developments in the jet field may completely bypass the type. Straw in the wind: Sir Roy Fedden, one of Britain's top powerplant men, indicated recently that they should stop pouring precious pounds down the turboprop drain and concentrate on developing the pure jet.

But Allison—like the mythical bumblebee—doesn't know that. They've got the T-56 with 3,750 hp and the T-54, a twin T-56, coming along fast. The T-54 is scheduled for Republic's F-84H . . . And four Allison engines go to Lockheed's new C-130 turboprop transport. Prototypes are now being built at Burbank; production will follow at Marietta, Ga. High-wing layout reminds you of the Chase C-123; span of C-130 is 132 ft., length 95 ft., height 38 ft. . . . Aeronca is back in the civil airplane business after three-year lapse. New design is 300-mph. executive transport . . . Got $36,000? Then you can buy a Hiller 12-B three-place 'copter. This is everyman's vehicle?

In England, RAF may order small quantity of DH-110 all-weather fighter. Prototype crashed last fall at Farnborough in spectacle of the year. . . . Avro Canada is planning 1,500 mph flying saucer with powerplant revolving around central cockpit. Design aim: vertical climb. . . . New Red night-fighter is a Tupolev design, say German sources. Twin jets, sweptback wings show resemblance to Messerschmitt 262 advanced proposals.



Naval version of the MiG-15 now in service on "Maxim Gorki" and other Soviet carriers. Reinforced fuselage.

Red Russia's Remarkable Aircraft Industry

But like a Capitalistic country, Soviet air industry battles production bottlenecks

By WILLIAM GREEN

Illustrated by ROY CROSS

■ Russia now ranks among the first three great powers in airplane design. The USSR's rapid progress in combat airplane design since the war has frequently been attributed to her legacy of German research results and technicians, but although German influence is to be seen in the design of current Red warplanes, the fact that Russian research had advanced to a degree where the most *advanced* ideas of the German industry could be assimilated is the important point. The Soviet Union possesses the largest and most comprehensive government-sponsored system of aviation research establishments in existence, and her postwar planes are by no means slavish copies of German wartime projects.

Early in 1947 the British government made a very serious mistake when it exported to the Soviet Union a quantity of Rolls-Royce Nene jet engines, the acquisition of which by the Russians directly resulted in the MiG-15's ability to mix it with the finest combat airplanes of the West.

It is instructive to note how the "pirating" of this engine design lifted the Soviet airplane industry over a very unpleasant period in which her own turbo-jets and those taken from German wartime designs were insufficiently developed to be considered as production engines.

The first Red version of the RD-45 delivered 5,000 lb. thrust and was directly comparable with the type of Nene supplied by Britain. Russian development resulted in an up-rated version giving 6,000 lb. thrust dry and 6,750 lb. with water injection. This engine is installed in recent production MiG-15 fighters.

That the Russians had succeeded in copying the Nene was a fact occasioning widespread concern in Western military aviation circles, but even more disconcerting was the knowledge that Russian metallurgists had succeeded in developing efficient nickel-chromium base alloys for high-temperature applications.

Paralleling development of the centrifugal RD-45 series of jet units, Soviet technicians have perfected a series of high-powered axial-flow engines based on German designs. The first, a straightforward development of the Jumo 004H, which went into production in 1947, developed 4,400 lb. thrust. Progressive development has brought it into the 6,000 lb. thrust category; it now powers the Ilyushin Il-28. More advanced axials based on the Jumo 012 and the BMW 018 deliver 9,000 lb. thrust and over 11,000 lb. with afterburning.

Airframe manufacturing standards in the Soviet Union are in no way inferior to those of the United

States. Although German influence can be seen in the basic configurations of current Soviet machines such as the MiG-15, La-17 and Il-28, their "obvious" layouts and conventional semi-monocoque stressed-skin structures are fully in keeping with Russian design mentality. *Cheap and easy production remains the policy.*

The equipment of modern Soviet combat aircraft is now appreciably more comprehensive than it was two or three years ago. Instrumentation is adequate and radio equipment is of very high quality, both in design and manufacture. Gunsight and A.I. radar, blind-landing aids and ejector seats have been adopted, and ordnance is of a high standard. The standard fighter weapons are currently the 37-mm N and the 23-mm NS cannon which are identical in general layout, mounting and ammunition feed. Open link ammunition is used, the links being stripped before the rounds enter the feedway of the gun. This type of ammunition was coming into use with the *Luftwaffe* during the war years. Air-to-air missiles have been developed and when carried by the MiG-15 they are housed in wing-mounted jettisonable containers.

Russia's European satellites are being bled to aid the build-up of Communist air strength. Czechoslovakia, Poland and East Germany are heavily committed to the manufacture of components, sub-assemblies, instruments and equipment for Russian plants, and the Czech aircraft industry is now producing complete MiG-15s.

Main plant in the Czech program is the former *Aero* factory at Vysocany which produces the fuselages. The former *Rudy Letov* and *Avia* plants at Letnany and Cakovice are manufacturing the wings and various components, while complete RD-45 turbo-jets are produced at the Walter plant at Jinonice. The final assembly and testing of the Czech-built MiG-15s are not undertaken in Czechoslovakia, some machines being assembled in East Germany, but the bulk being shipped to ex-Jap plants in Manchuria where they are assembled and test-flown. Although the first MiGs flying in Korea came from Russian plants in the Urals, all deliveries made during the past year have been from Czechoslovakia. Thus, the build-up of Sino-Communist and North Korean air strength does not tax Russian production.

World War II saw the transfer of the bulk of the Soviet airplane plants west of longitude 45 deg. E., to the Urals and Siberia. Although most of the evacuated plants have since been rebuilt and the Moscow and Leningrad areas are once again important centers of aircraft manufacture, the wartime move means that European Russia no longer has bulk of the industry.

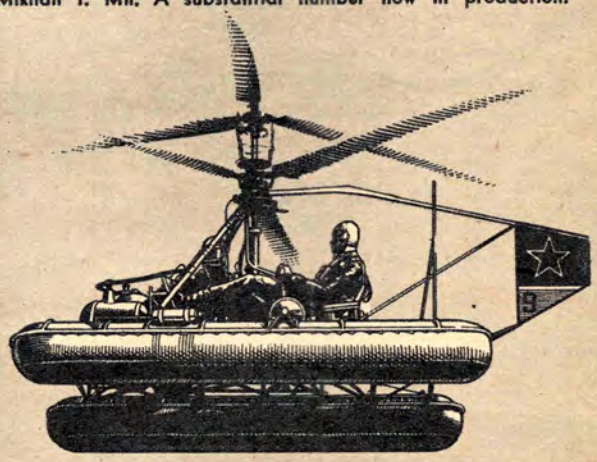
There are today more than one hundred major production plants (airframes, engines, accessories and repairs) in the Soviet aircraft industry, some sixty-five per cent of these in western and eastern Siberia, the Urals, the Far North and the Far East. The limitations of the Russian surface transportation system have necessitated the forming of these areas into self-contained production complexes. These separate industries will permit Russia to fight a two- or three-front war, but the economic disadvantages are obvious.

Light metal production remains the biggest obstacle in the path of airplane production expansion. At least five large aluminum plants have been built since the war, but in 1948 production of raw aluminum was only some 165,000 tons as compared with some 990,000 tons in the U.S.A. during that same year. Recent discoveries of large bauxite deposits will not materially affect Soviet aluminum production for years, owing to shortages of electric power, water and transport.

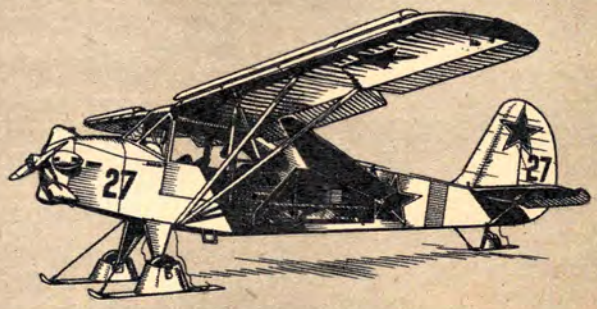
In a short war, production potential is much less important than initial stocks. The Russian airplane industry is troubled by serious shortages of raw materials, shortages which cannot be completely overcome for many years and which indicate that, from the standpoint of production potential and the ability to wage sustained air war, *everything but force is on our side.*

Yak-16, originally designed as feeder transport, used by Red AF as radio/navigation trainer. Transparent plastic nose.

Standard Soviet Army four-place helicopter designed by Mikhail I. Mil. A substantial number now in production.

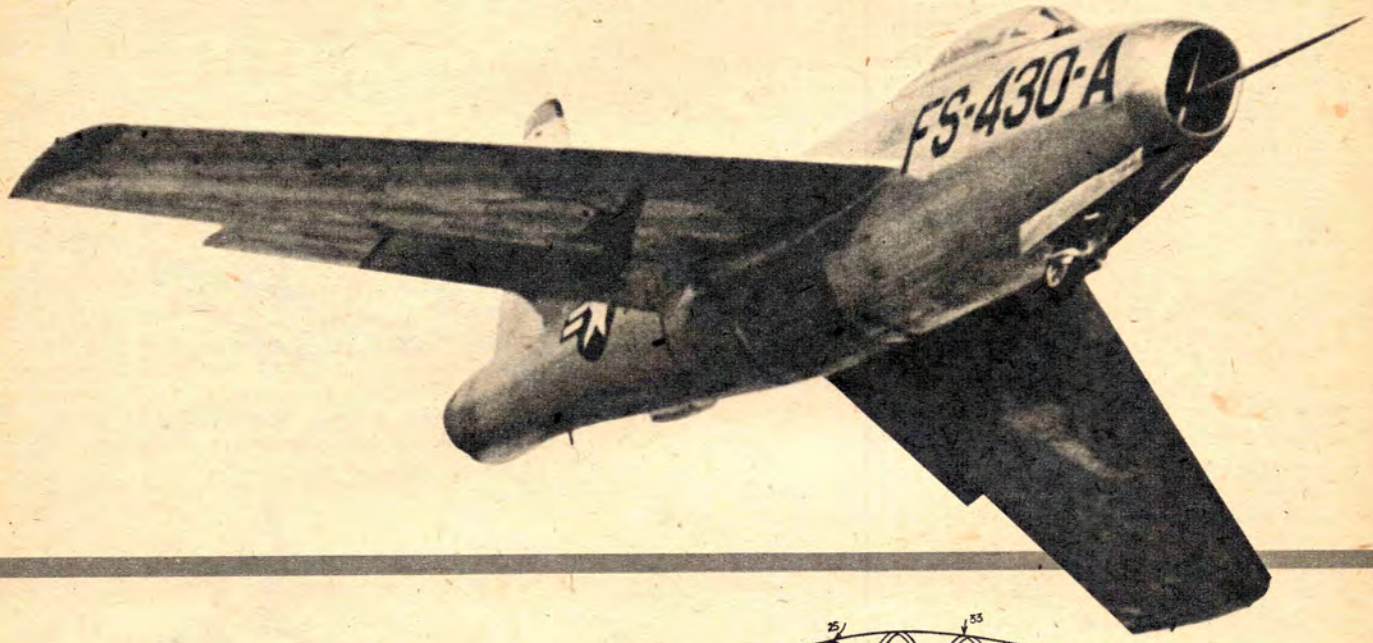


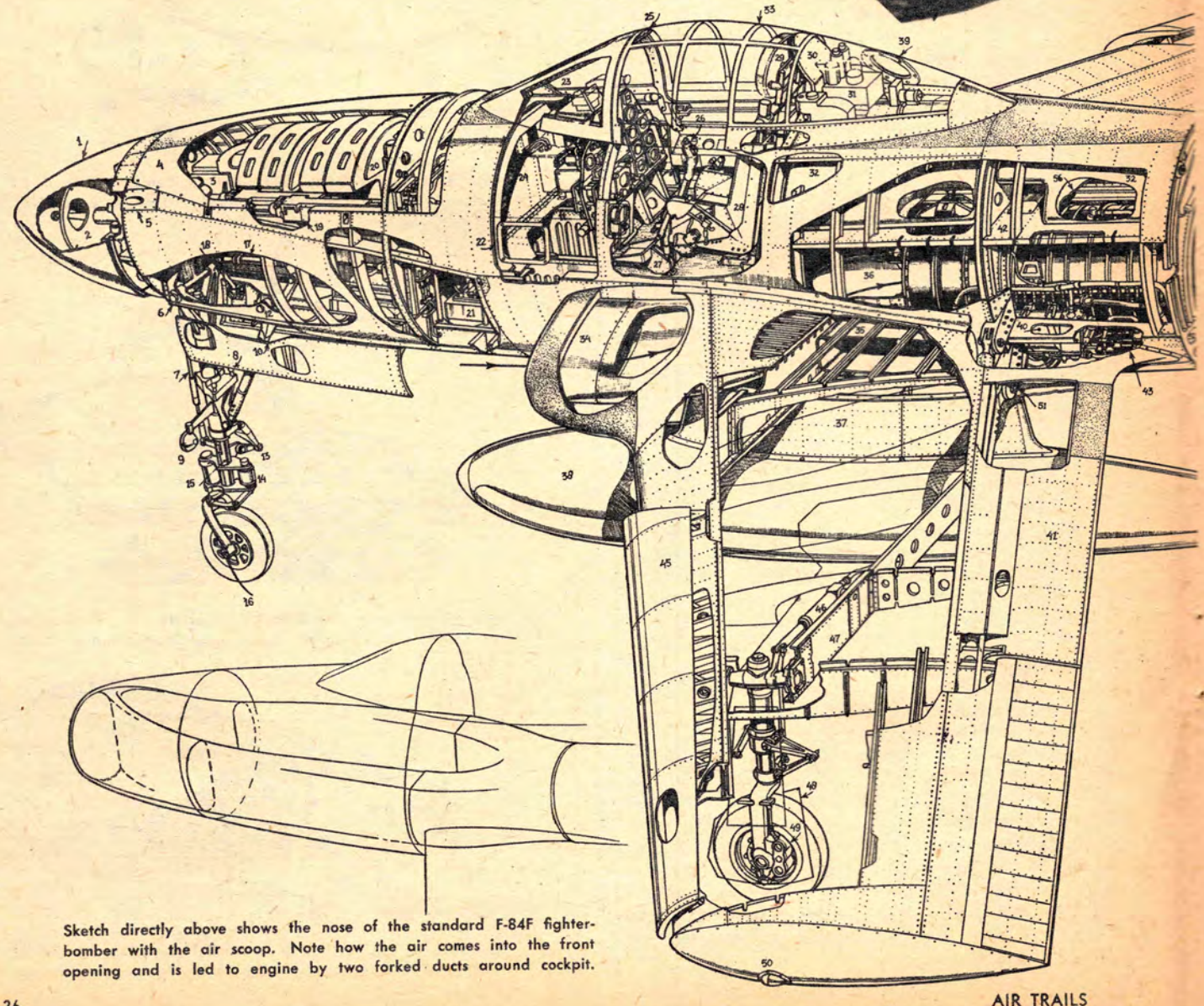
Kamov light helicopter, flown by Soviet Navy for observation, is carried aboard large submarines. Contrarotation rotors.



Improved version of Yak-14 liaison lightplane, widely used by Soviet AF. Has casualty entry hatch in aft section of fuselage.

Grandson of the Thunderbolt

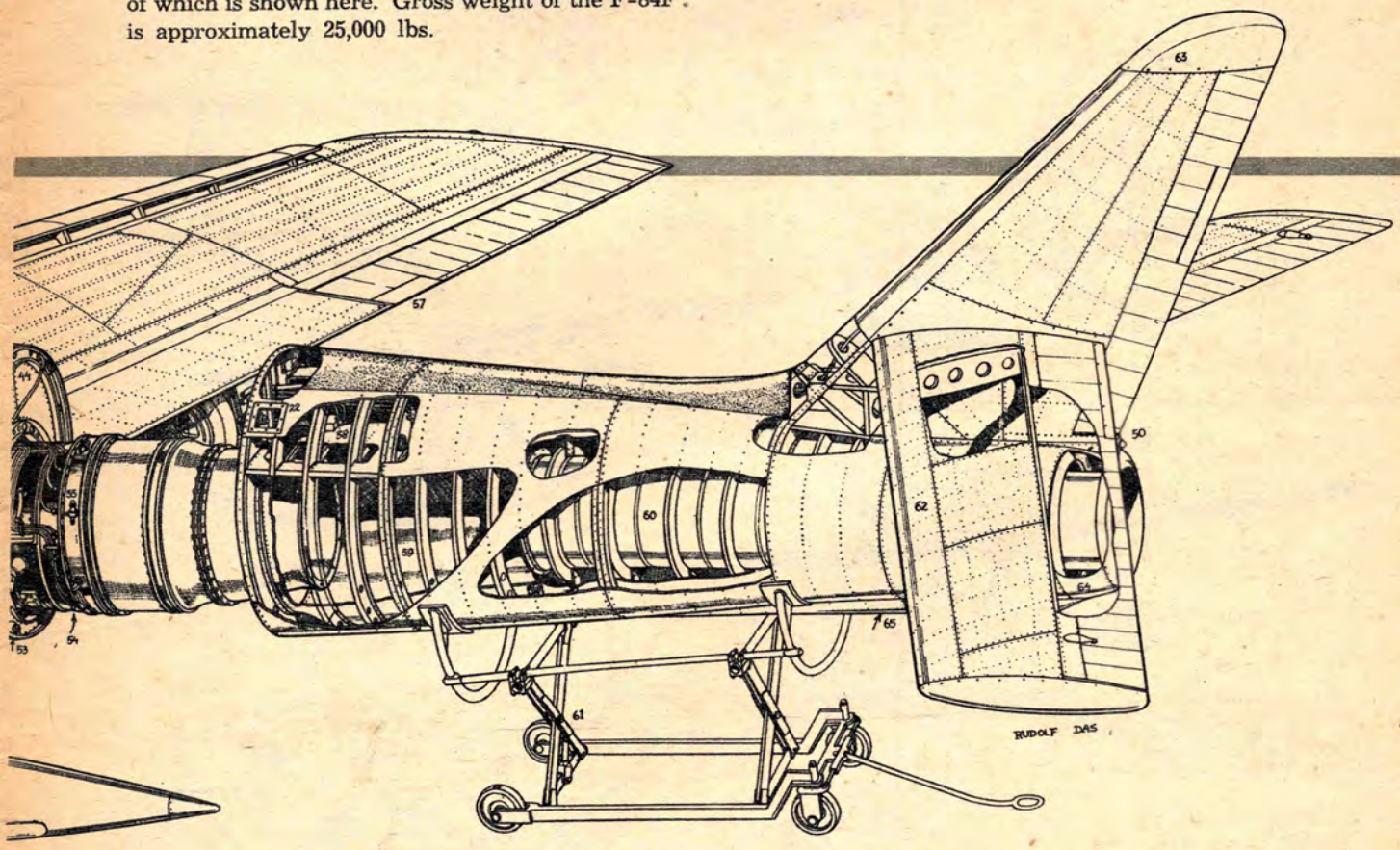




Sketch directly above shows the nose of the standard F-84F fighter-bomber with the air scoop. Note how the air comes into the front opening and is led to engine by two forked ducts around cockpit.

■ Another star on the horizon of a long line of famous aircraft, the F-84F Thunderstreak is a faster, harder-hitting sister of the Thunderjet, close-support fighter-bomber which so valiantly acquitted itself in Korea. Although basically same as the straight-wing F-84E Thunderjet, the Thunderstreak has undergone many changes in order to give it added speed and huskiness required to take the 7,200-lb. push of the powerful Wright J-65 Sapphire engine. It exists in two different models, one with the conventional nose air intake and the other mounting air intakes in extended wing root ducts, which permits the installation of camera equipment in the nose for photo reconnaissance work. This model is designated as RF-84F. There is also a version of the solid-nose Thunderstreak mounting machine guns in the nose, the cutaway of which is shown here. Gross weight of the F-84F is approximately 25,000 lbs.

Thunderstreak and its war load. As bomber the plane can carry 24 5-inch HVAR rockets or four 1000 lb. bombs, or a mixture of fuel and armament such as two 1000 lb. bombs and two 230 gallon tanks.



1. Plastic antenna housing. 2. Radar antenna. 3. Radar voltage regulators and other electronics. 4. Hinged nose panel. 5. Gun-blast protection panel. 6. Nosewheel mounting. 7. Leg shortening strut. 8. Up-lock. 9. Landing light. 10. Nose gear retracting mechanism. 11. Forward fuselage fuel tank. 12. Retracting mechanism mounting. 13. Torsion scissor. 14. Shimmy neutralizer. 15. Shock-absorbing strut. 16. Static discharge. 17. Nosewheel operating jack. 18. Wheel doors and landing gear inter-connection. 19. Browning .50 cal. machine gun. 20. Ammunition boxes. 21. Battery. 22. Inspection panel. 23. Radar gunsight and gun camera's. 24 Radio, radar computors and automatic pilot. 25. Armored windshield. 26. Pilot's control stick. 27. Ejection-seat foot rest. 28. Pilot's ejection-seat. 29. Head rest. 30. Armor plate. 31. Radio-compass loop. 32. Main fuel tank. 33. Electrically operated sliding canopy (on prototype only, production machines with hinged hood.) 34. Wing-root air intakes. 35. Wing fuel tank. 36. Wright J-65 engine (license of British-built A. S. Sapphire). 37. External wing-tank strut. 38. 450 gal. under-wing tank. 39. Inspection panel in Plexiglas hood. 40. Oil tank. 41. Hydraulically operated flap. 42. Firewall. 43. Fuel filter and flow regulator. 44. Main fuselage bulkhead. 45. Automatic slot. 46. Main landing gear operating jack. 47. Auxiliary wing spar. 48. Wheel door fixed to oleo-strut. 49. Hydraulic brakes. 50. Navigation lights. 51. Aft wing-fuselage attachment. 52. Engine mount. 53. Fuselage joint. 54. Fuel lines. 55. Engine burners. 56. Rail for engine removal. 57. Trim tab. 58. Radio. 59. Rear fuselage (internally insulated for jet pipe cooling). 60. Jet pipe. 61. Rear fuselage transport dolly. 62. "Flying tail." 63. Plastic part of fin with flush V.H.F. antenna. 64. Removable tail-cone. 65. Tail bumper.

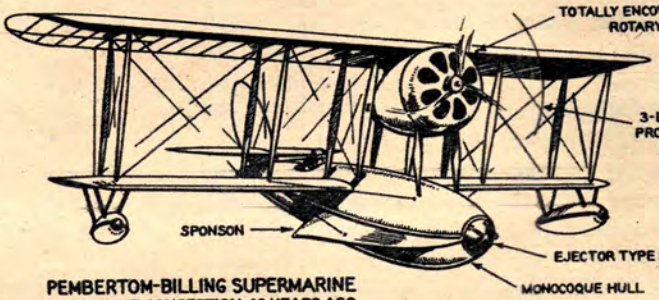
Detail drawing shows form of air inlet ducts in first production machines with nose intakes.

AIR PROGRESS

THE SUPERMARINE STORY

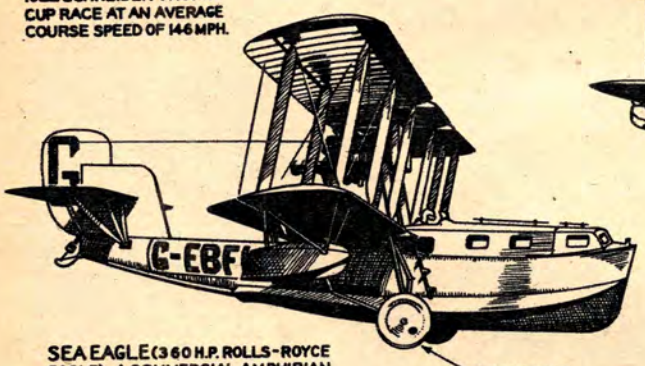
By DOUGLAS ROLFE

SEA LION MK.II (450 H.P. NAPIER LION) WINNER OF 1922 SCHNEIDER TROPHY CUP RACE AT AN AVERAGE COURSE SPEED OF 146 MPH.

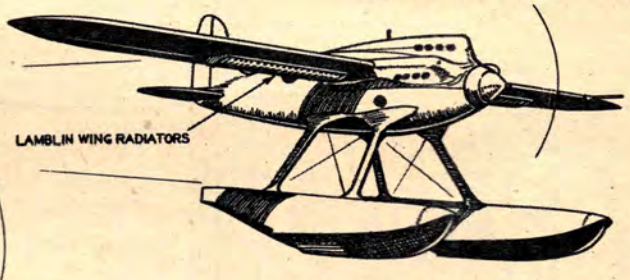


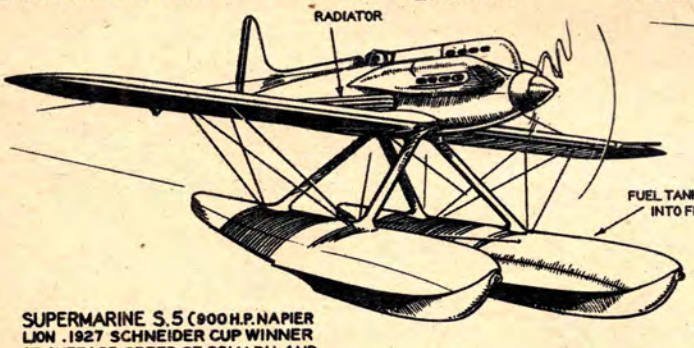
PEMBERTOM-BILLING SUPERMARINE STREAMLINE CONCEPTION 40 YEARS AGO.

SEAL MK. II (450 H.P. NAPIER LION) A 1922 DECK LANDING AMPHIBIAN WHICH WAS USED BY MANY NAVIES OF THE WORLD DURING THIS ERA.



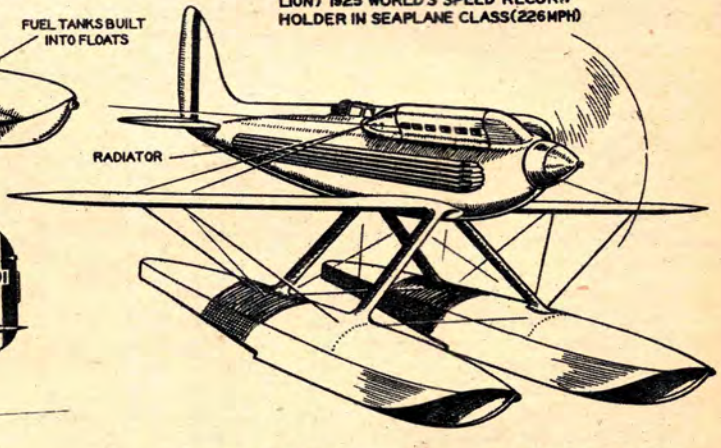
SEA EAGLE (360 H.P. ROLLS-ROYCE EAGLE). A COMMERCIAL AMPHIBIAN PRODUCED IN 1922. 6-8 PASSENGERS

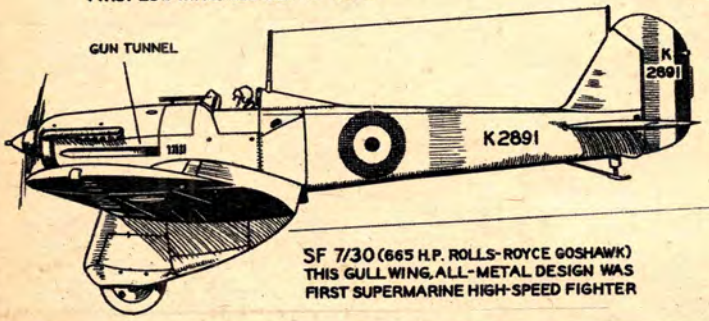




SUPERMARINE S.5 (900 H.P. NAPIER LION. 1927 SCHNEIDER CUP WINNER AT AVERAGE SPEED OF 281 M.P.H. AND FIRST LOW WING, ALL-METAL "SUPE"

SUPERMARINE S.4 (630 H.P. NAPIER LION) 1925 WORLD'S SPEED RECORD HOLDER IN SEAPLANE CLASS (226 MPH)





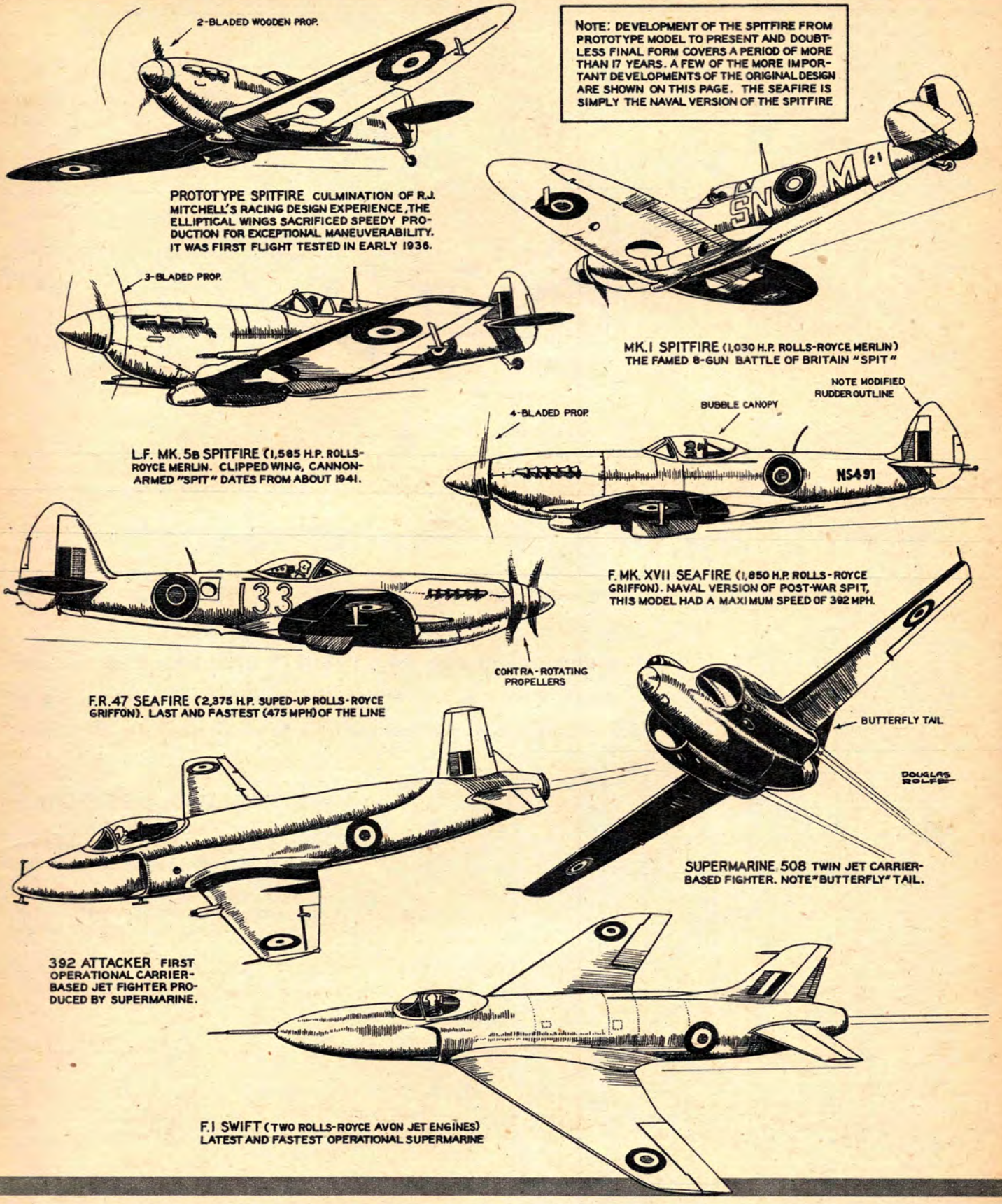
SF 7/30 (665 H.P. ROLLS-ROYCE GOSHAWK) THIS GULL WING, ALL-METAL DESIGN WAS FIRST SUPERMARINE HIGH-SPEED FIGHTER

SUPERMARINE S.6 (1,800 H.P. ROLLS-ROYCE). 1929 SCHNEIDER CUP WINNER AT 328 M.P.H. – S.6B SET 407 M.P.H. SPEED RECORD IN 1931

The Supermarine company was established in 1912 and although today its name is immediately associated with high-speed military aircraft, it engaged at first in the production of flying boats and amphibians. The first model illustrated here was designed by Capt. Noel Pemberton-Billing in 1914, and looking at this 39-year-old boat it seems incredible that anything so advanced could have been conceived and built so long ago.

Further examples of early Supermarine boats are shown, but none is quite so boldly imaginative as the first Pemberton-Billing design. Despite this, in 1922 a Supermarine boat proved good enough to win the coveted Jacques Schneider Trophy races—the classic speed event of the period.

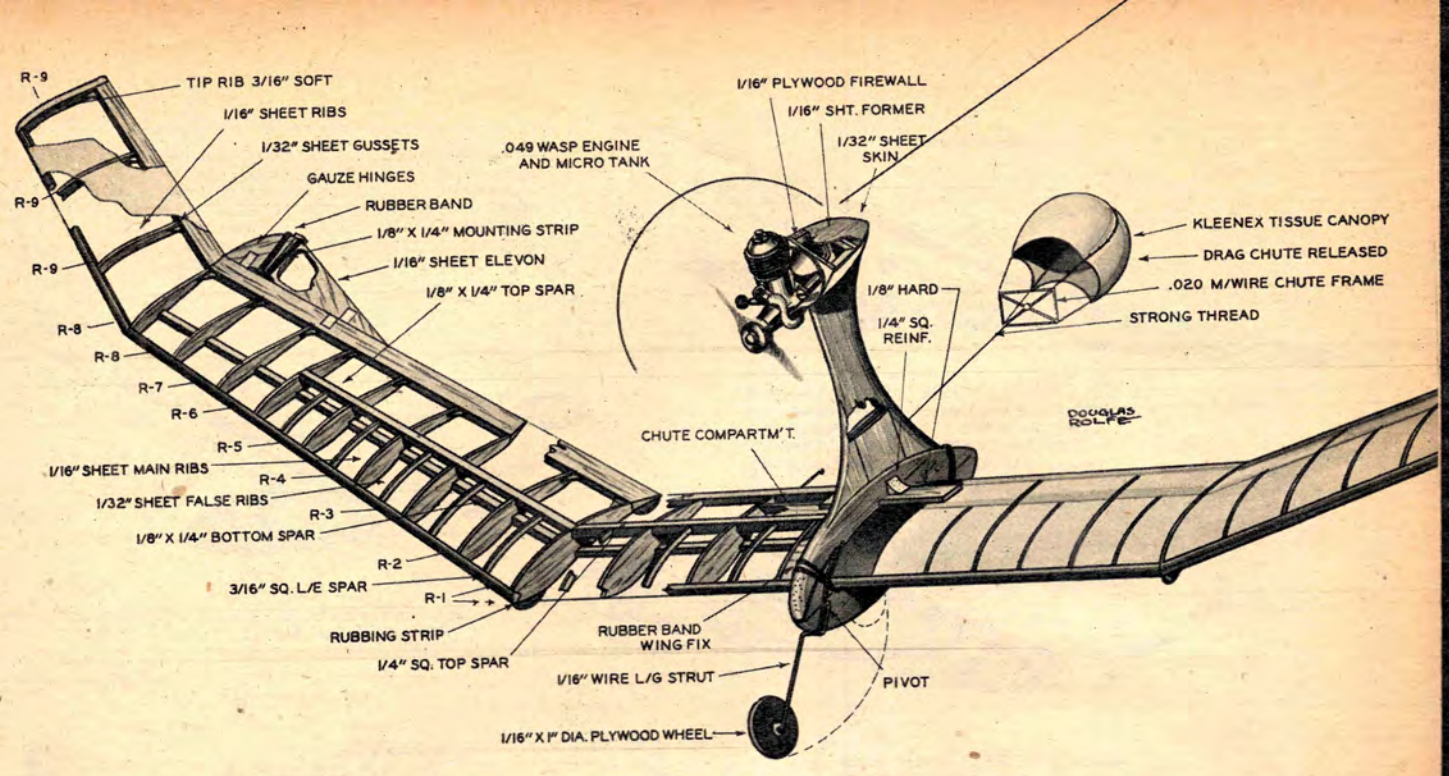
In 1928 the company was absorbed by the great engineering and armament firm of Vickers and today forms part of the Aviation Division of Vickers-Armstrong Ltd. Even before the merger Supermarine had started developing high-speed aircraft. Their brilliant


2-BLADED WOODEN PROP.
NOTE: DEVELOPMENT OF THE SPITFIRE FROM PROTOTYPE MODEL TO PRESENT AND DOUBTLESS FINAL FORM COVERS A PERIOD OF MORE THAN 17 YEARS. A FEW OF THE MORE IMPORTANT DEVELOPMENTS OF THE ORIGINAL DESIGN ARE SHOWN ON THIS PAGE. THE SEAFIRE IS SIMPLY THE NAVAL VERSION OF THE SPITFIRE
PROTOTYPE SPITFIRE CULMINATION OF R.J. MITCHELL'S RACING DESIGN EXPERIENCE, THE ELLIPTICAL WINGS SACRIFICED SPEEDY PRODUCTION FOR EXCEPTIONAL MANEUVERABILITY. IT WAS FIRST FLIGHT TESTED IN EARLY 1936.
3-BLADED PROP.
MK.I SPITFIRE (1,030 H.P. ROLLS-ROYCE MERLIN) THE FAMED 8-GUN BATTLE OF BRITAIN "SPIT"
NOTE MODIFIED RUDDER OUTLINE
BUBBLE CANOPY
4-BLADED PROP.
L.F. MK. 5B SPITFIRE (1,585 H.P. ROLLS-ROYCE MERLIN. CLIPPED WING, CANNON-ARMED "SPIT" DATES FROM ABOUT 1941.
NS491
F. MK. XVII SEAFIRE (1,850 H.P. ROLLS-ROYCE GRIFFON). NAVAL VERSION OF POST-WAR SPIT, THIS MODEL HAD A MAXIMUM SPEED OF 392 MPH.
CONTRA-ROTATING PROPELLERS
F.R.47 SEAFIRE (2,375 H.P. SUPED-UP ROLLS-ROYCE GRIFFON). LAST AND FASTEST (475 MPH) OF THE LINE
BUTTERFLY TAIL
DOUGLAS ROLFE
SUPERMARINE 508 TWIN JET CARRIER-BASED FIGHTER. NOTE "BUTTERFLY" TAIL.
392 ATTACKER FIRST OPERATIONAL CARRIER-BASED JET FIGHTER PRODUCED BY SUPERMARINE.
F.1 SWIFT (TWO ROLLS-ROYCE AVON JET ENGINES) LATEST AND FASTEST OPERATIONAL SUPERMARINE

designer, R. J. Mitchell, produced the famed "S" model racing planes which won the Schneider Cup races three times in succession (1927, 1929 and 1931), boosted airspeed beyond the 400-mile mark and paved the way for the great Spitfire fighters which only recently have reached the obsolescent stage.

Development of the Spitfire itself is covered in some detail on these pages. The prototype model appeared in 1935 or thereabouts, and the production model, the Mark I Spitfire, was put into service just in time to enable it to take a decisive part in the Battle of Britain. Since then there have been many modifications of this airplane and the current models (still in service though obsolescent) are considerably more powerful, faster and more heavily armed than the historic Mark I which they still closely resemble outwardly.

Latest Supermarine production models, notably the Attacker and the Swift, stand up with the world's best jet fighters and uphold the Supermarine reputation for fast, first-class military aircraft.

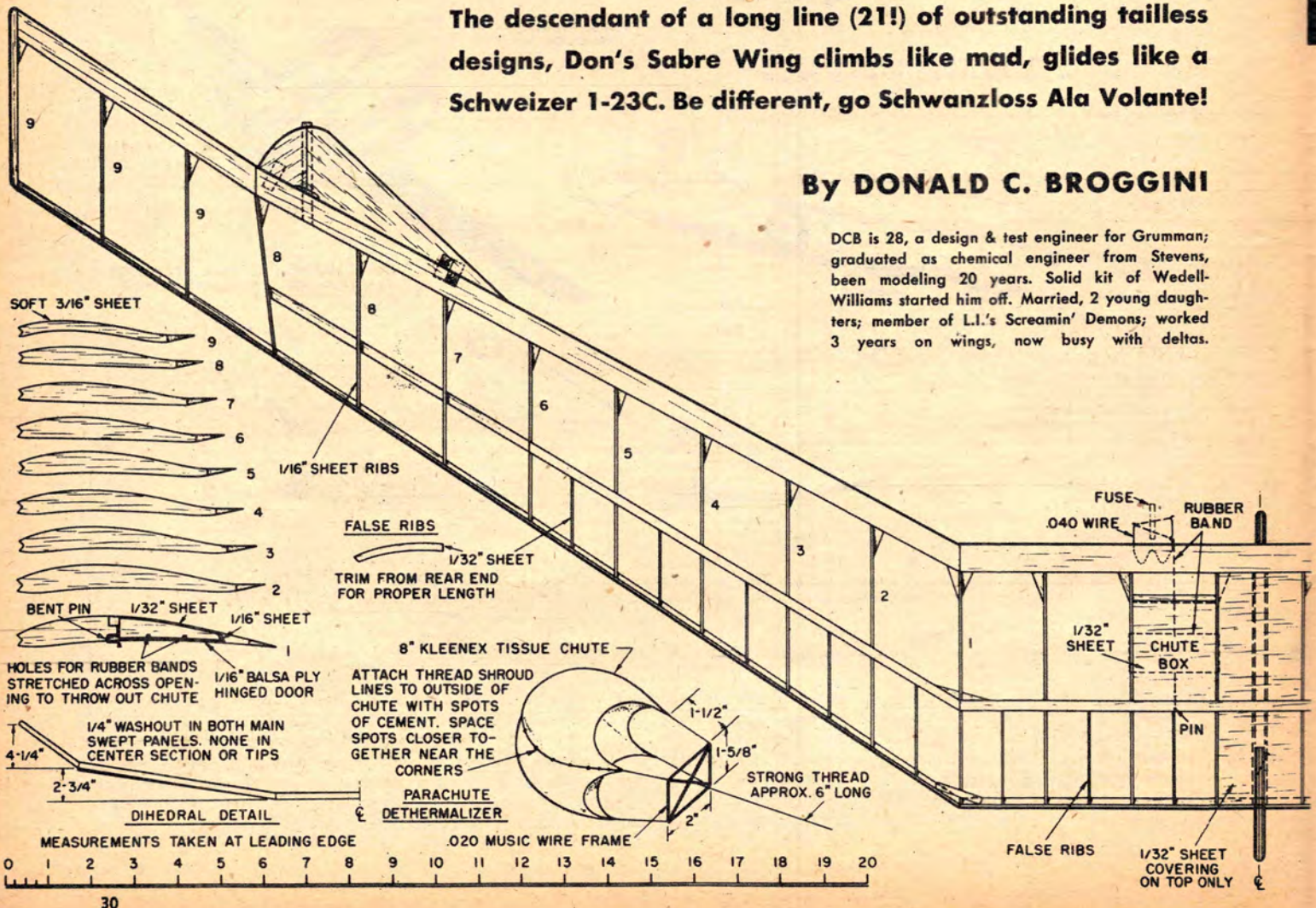


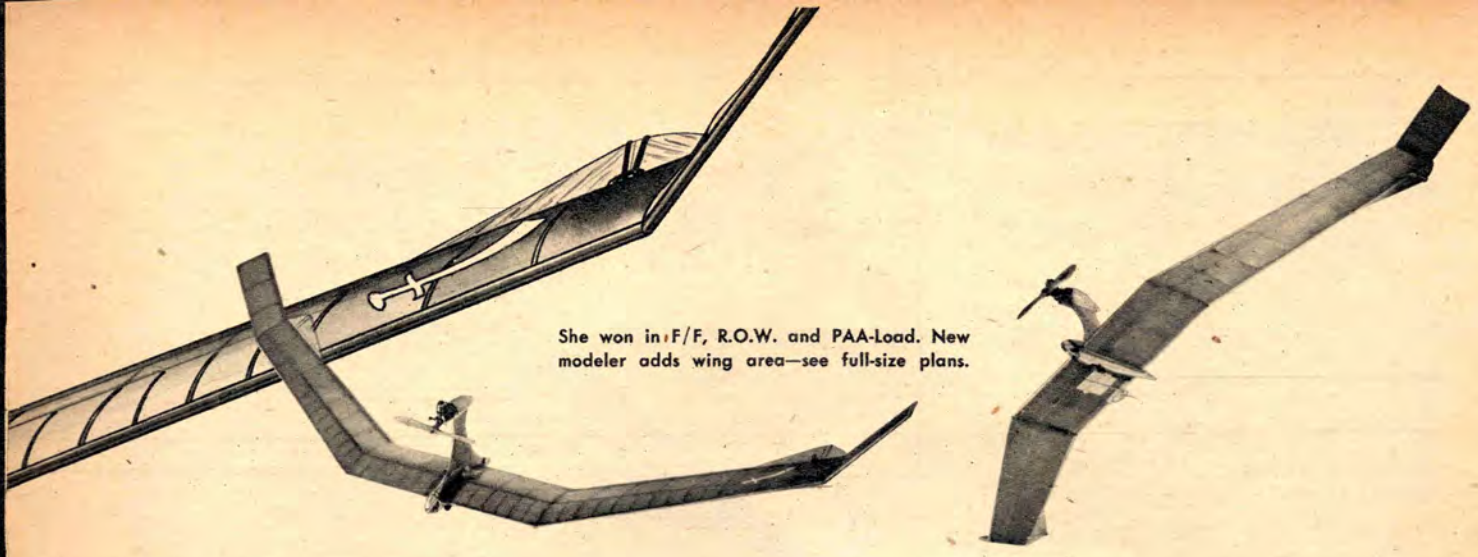
Broggini's Best Flying Wing

The descendant of a long line (21!) of outstanding tailless designs, Don's Sabre Wing climbs like mad, glides like a Schweizer 1-23C. Be different, go Schwanzloss Ala Volante!

By DONALD C. BROGGINI

DCB is 28, a design & test engineer for Grumman; graduated as chemical engineer from Stevens, been modeling 20 years. Solid kit of Wedell-Williams started him off. Married, 2 young daughters; member of L.I.'s Screamin' Demons; worked 3 years on wings, now busy with deltas.


SOFT 3/16" SHEET
1/16" SHEET RIBS
FALSE RIBS
1/32" SHEET
TRIM FROM REAR END FOR PROPER LENGTH
BENT PIN
1/32" SHEET
1/16" SHEET
HOLES FOR RUBBER BANDS STRETCHED ACROSS OPENING TO THROW OUT CHUTE
1/16" BALSA PLY HINGED DOOR
8" KLEENEX TISSUE CHUTE
ATTACH THREAD SHROUD LINES TO OUTSIDE OF CHUTE WITH SPOTS OF CEMENT. SPACE SPOTS CLOSER TOGETHER NEAR THE CORNERS
1-1/2"
1-5/8"
STRONG THREAD APPROX. 6" LONG
2"
.020 MUSIC WIRE FRAME
PARACHUTE DETHERMALIZER
1/4" WASHOUT IN BOTH MAIN SWEPT PANELS. NONE IN CENTER SECTION OR TIPS
4-1/4"
2-3/4"
DIHEDRAL DETAIL
MEASUREMENTS TAKEN AT LEADING EDGE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
FUSE
.040 WIRE
RUBBER BAND
1/32" SHEET
CHUTE BOX
PIN
FALSE RIBS
1/32" SHEET COVERING ON TOP ONLY



She won in F/F, R.O.W. and PAA-Load. New modeler adds wing area—see full-size plans.

■ The *Sabre Wing*, the culmination of a series of 22 Half-A free flight wing designs, is best yet. It is the "hottest" wing yet designed. Climb is the ship's middle name. *Sabre Wing's* performance is such that on many occasions it has trimmed the pants off the best of conventional ships, and has always held its own against them.

It and its flying wing predecessors have a long list of wins including Half-A free-flight, the Pan American weight lifting events, and even rise-off-water, in meets ranging from the smaller local contests to the larger Plymouth get-togethers and on up to the mammoth Mirror Meet. For instance, one of the ships in a contest season brought home the hardware in 7 out of the 8 contests entered in the very popular Half-A free flight event.

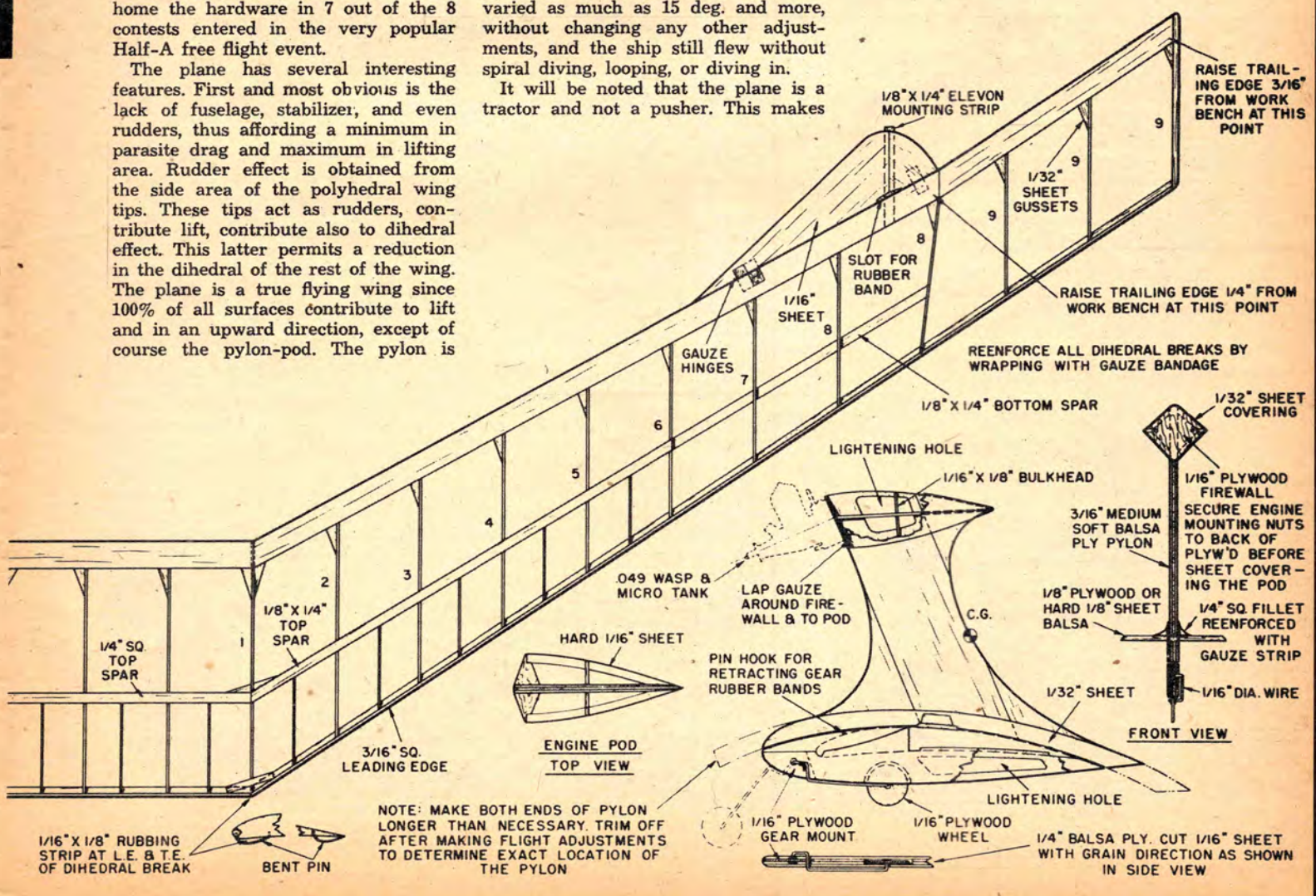
The plane has several interesting features. First and most obvious is the lack of fuselage, stabilizer, and even rudders, thus affording a minimum in parasite drag and maximum in lifting area. Rudder effect is obtained from the side area of the polyhedral wing tips. These tips act as rudders, contribute lift, contribute also to dihedral effect. This latter permits a reduction in the dihedral of the rest of the wing. The plane is a true flying wing since 100% of all surfaces contribute to lift and in an upward direction, except of course the pylon-pod. The pylon is adjustable for ease in trimming individual planes, as are the elevons. The main lifting surface is the popular and highly efficient NACA 6409 airfoil. The forward 70% of the root airfoil of the main swept-back section is also NACA 6409 airfoil.

The craft has an exceptional climb and an excellent glide, as may be seen from its low power and wing loading and clean design. The ship possesses the lowest power to weight and area ratio of any flying wing ever made. The *Sabre Wing* is a well proven, consistent design and is not critical to adjust or fly. Its 21 predecessors are the reasons why. For instance, after having adjusted the ship, side or down thrust was then varied as much as 15 deg. and more, without changing any other adjustments, and the ship still flew without spiral diving, looping, or diving in.

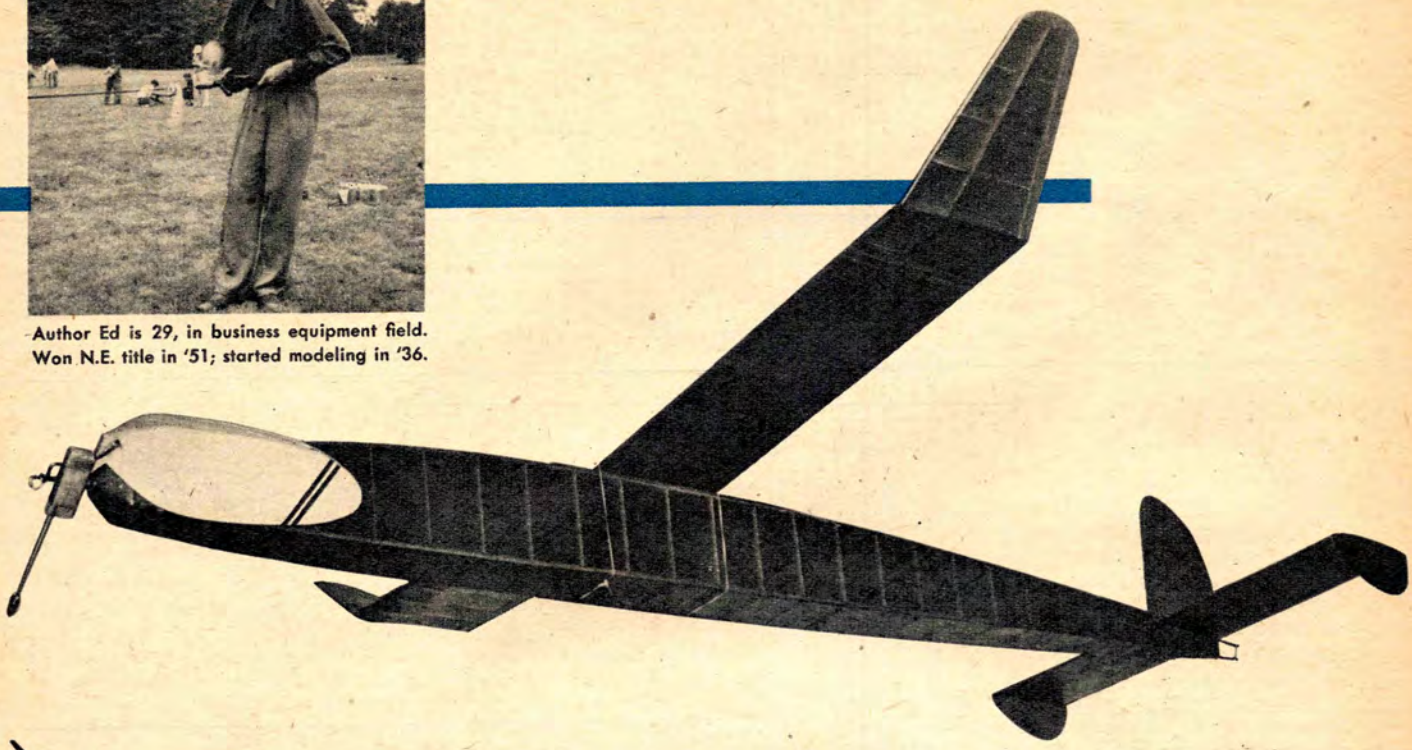
It will be noted that the plane is a tractor and not a pusher. This makes launching technique easy and eliminates the need for carving a "backwards" prop or a motor that will run backwards.

The secret of the directional stability (which is the real problem in high-powered flying wings, not longitudinal stability) is the low CLA with respect to the C.G. and the polyhedral wing tip arrangement, both of which are the result of extensive testing and developing. The tips are not toed-in, incidentally, as would appear from the toed-in wing break.

Complete instructions and design data available on full-size plans.


RAISE TRAILING EDGE 3/16" FROM WORK BENCH AT THIS POINT
1/8"X 1/4" ELEVON MOUNTING STRIP
1/32" SHEET GUSSETS
SLOT FOR RUBBER BAND
1/16" SHEET
RAISE TRAILING EDGE 1/4" FROM WORK BENCH AT THIS POINT
GAUZE HINGES
REENFORCE ALL DIHEDRAL BREAKS BY WRAPPING WITH GAUZE BANDAGE
1/8"X 1/4" BOTTOM SPAR
1/32" SHEET COVERING
LIGHTENING HOLE
1/16"X 1/8" BULKHEAD
1/16" PLYWOOD FIREWALL
3/16" MEDIUM SOFT BALSA PLY PYLON
SECURE ENGINE MOUNTING NUTS TO BACK OF PLYW'D BEFORE SHEET COVERING THE POD
.049 WASP & MICRO TANK
LAP GAUZE AROUND FIREWALL & TO POD
1/8" PLYWOOD OR HARD 1/8" SHEET BALSA
1/4" SQ. FILLET REENFORCED WITH GAUZE STRIP
C.G.
1/4" SQ TOP SPAR
1/8"X 1/4" TOP SPAR
HARD 1/16" SHEET
PIN HOOK FOR RETRACTING GEAR RUBBER BANDS
1/32" SHEET
1/16" DIA. WIRE
FRONT VIEW
3/16" SQ. LEADING EDGE
ENGINE POD TOP VIEW
LIGHTENING HOLE
1/16"X 1/8" RUBBING STRIP AT L.E. & T.E. OF DIHEDRAL BREAK
BENT PIN
NOTE: MAKE BOTH ENDS OF PYLON LONGER THAN NECESSARY. TRIM OFF AFTER MAKING FLIGHT ADJUSTMENTS TO DETERMINE EXACT LOCATION OF THE PYLON
1/16" PLYWOOD GEAR MOUNT
1/16" PLYWOOD WHEEL
1/4" BALSA PLY. CUT 1/16" SHEET WITH GRAIN DIRECTION AS SHOWN IN SIDE VIEW

Author Ed is 29, in business equipment field. Won N.E. title in '51; started modeling in '36.



FOR THE NEW AMERICAN LIMITED RUBBER EVENT

THE BOSTONIAN

Exactly the model you need for Plymouth events, AMA contests; this plane has already won in big meets

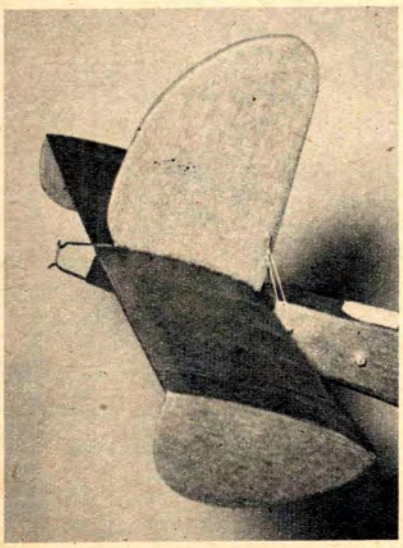
By EDWARD G. DOLBY

With the active cooperation of the New England Wakefield Group, renowned designer-flyers and contest winners.

■ The new rubber rules will require a different airplane for contest goers. The 1953-54 limited rubber event allows a maximum of 200 square inches of lifting surfaces (wing and tail). This does not necessarily mean a small model; in fact, we have produced just the opposite, the largest airplane the rules would allow. The reason is that this type of model will win the meets because of the natural advantages of larger models. However, the new rules give us a model that can be more easily and quickly built, and is simpler for the average modeler to fly. This model incorporates all these features as well as a good-size fuselage, which is the trend in design, for those who want to go ahead and add more power and still have an airplane that will be able to take it in its stride, with a minimum of adjusting.

The New England Wakefield Group has tried, tested and suggested many of the features incorporated in the *Bostonian*. It is truly a "Boston model," which means that possible rough weather has to be considered in the design. For this reason the ship will perform equally well in all kinds of weather. Medium wood of even strength is used throughout unless otherwise specified.

Complete construction details are available on the full-size plans.

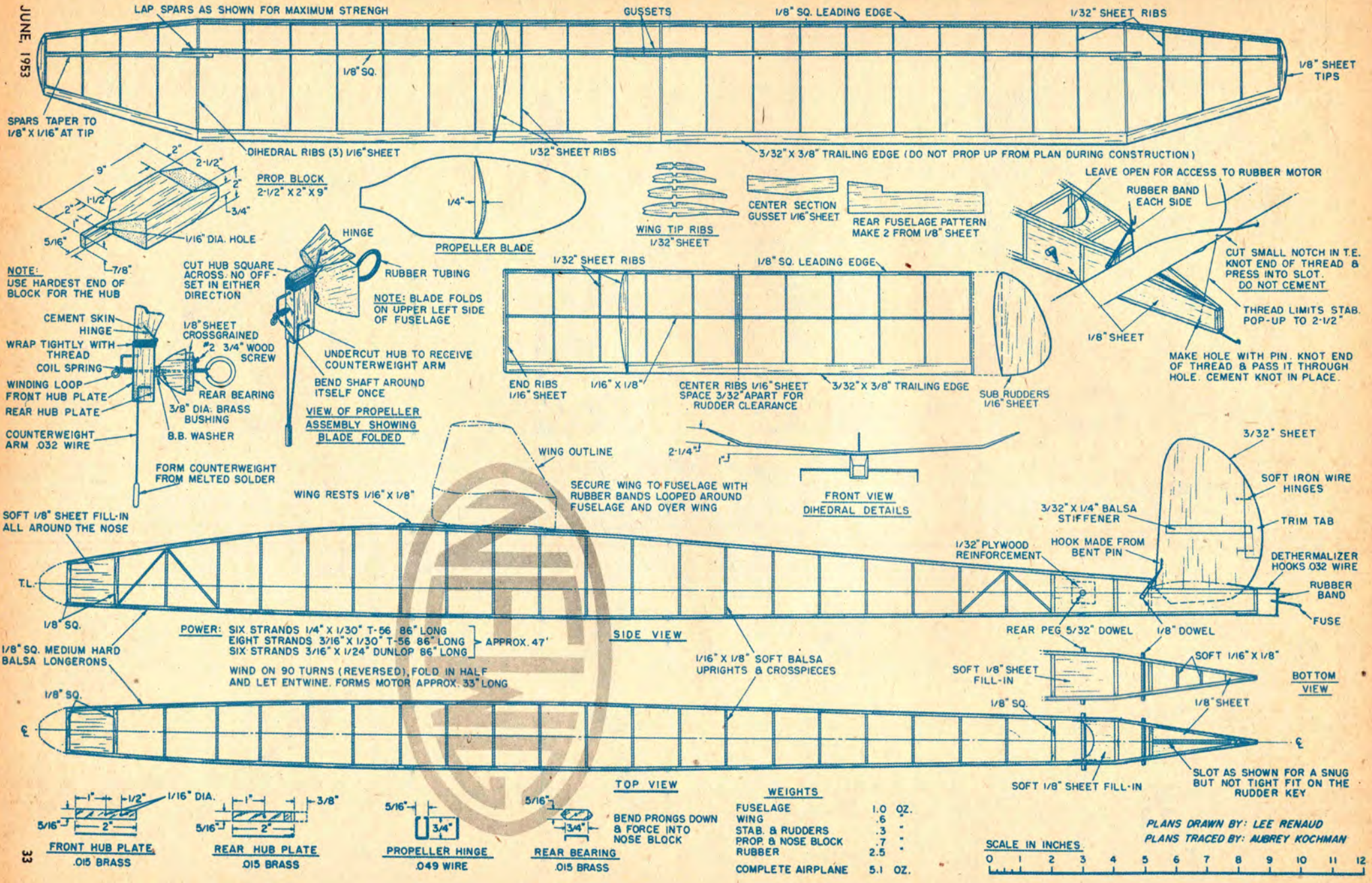


Unpolite Bostonian turns tail; note rudder trim tab. Beginners can use ready-shaped prop for good results; single-blade job is for experts.

Bill of Materials

(All balsa, and 36" long unless indicated otherwise)

10 pcs. ⅛" sq. medium. 11 pcs. ⅛" x 1/16" medium. 2 pcs. 3/32" x ⅜" tapered T.E. medium. 2 pcs. 1/32" x 3" sheet medium. 1 1/16" x 2" x 18" medium. 1 pc. ⅛" x 3" x 18" soft. 1 pc. 3/32" x 3" x 12" soft. 2½ sheets light model tissue. 1 prop block 2½" x 2" x 9" soft. Miscellaneous: 1/32" plywood, brass sheet, wire, dowels, ball bearing, spring, rubber tubing, med. face bushing, solder.

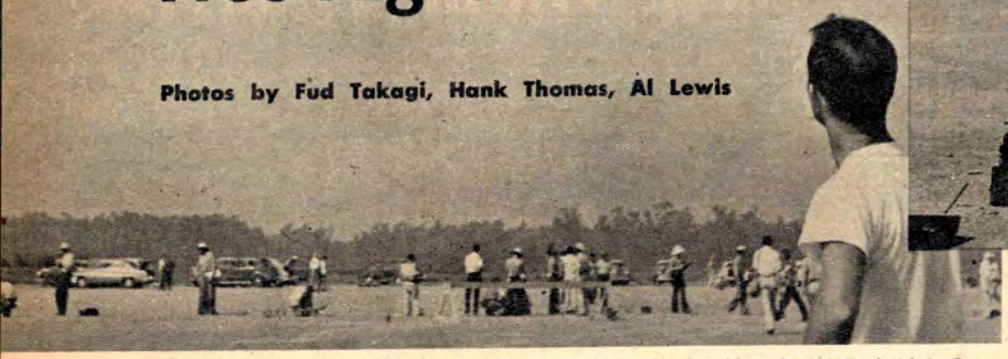

LAP SPARS AS SHOWN FOR MAXIMUM STRENGH
GUSSETS
1/8" SQ. LEADING EDGE
1/32" SHEET RIBS
1/8" SHEET TIPS
1/8" SQ.
SPARS TAPER TO 1/8" X 1/16" AT TIP
DIHEDRAL RIBS (3) 1/16" SHEET
1/32" SHEET RIBS
3/32" X 3/8" TRAILING EDGE (DO NOT PROP UP FROM PLAN DURING CONSTRUCTION)
PROP BLOCK 2-1/2" X 2" X 9"
1/16" DIA. HOLE
NOTE: USE HARDEST END OF BLOCK FOR THE HUB
PROPELLER BLADE
WING TIP RIBS 1/32" SHEET
CENTER SECTION GUSSET 1/16" SHEET
REAR FUSELAGE PATTERN MAKE 2 FROM 1/8" SHEET
LEAVE OPEN FOR ACCESS TO RUBBER MOTOR
RUBBER BAND EACH SIDE
CUT SMALL NOTCH IN T.E. KNOT END OF THREAD & PRESS INTO SLOT. DO NOT CEMENT
THREAD LIMITS STAB. POP-UP TO 2-1/2"
1/8" SHEET
MAKE HOLE WITH PIN. KNOT END OF THREAD & PASS IT THROUGH HOLE. CEMENT KNOT IN PLACE.
HINGE
RUBBER TUBING
CUT HUB SQUARE ACROSS. NO OFF-SET IN EITHER DIRECTION
NOTE: BLADE FOLDS ON UPPER LEFT SIDE OF FUSELAGE
UNDERCUT HUB TO RECEIVE COUNTERWEIGHT ARM
BEND SHAFT AROUND ITSELF ONCE
VIEW OF PROPELLER ASSEMBLY SHOWING BLADE FOLDED
CEMENT SKIN HINGE
WRAP TIGHTLY WITH THREAD
COIL SPRING
WINDING LOOP
FRONT HUB PLATE
REAR HUB PLATE
COUNTERWEIGHT ARM .032 WIRE
1/8" SHEET CROSSGRAINED
#2 3/4" WOOD SCREW
REAR BEARING
3/8" DIA. BRASS BUSHING
B.B. WASHER
FORM COUNTERWEIGHT FROM MELTED SOLDER
1/32" SHEET RIBS
1/8" SQ. LEADING EDGE
END RIBS 1/16" SHEET
1/16" X 1/8"
CENTER RIBS 1/16" SHEET SPACE 3/32" APART FOR RUDDER CLEARANCE
3/32" X 3/8" TRAILING EDGE
SUB RUDDERS 1/16" SHEET
WING OUTLINE
WING RESTS 1/16" X 1/8"
SECURE WING TO FUSELAGE WITH RUBBER BANDS LOOPED AROUND FUSELAGE AND OVER WING
2-1/4"
FRONT VIEW DIHEDRAL DETAILS
3/32" SHEET
SOFT IRON WIRE HINGES
3/32" X 1/4" BALSA STIFFENER
TRIM TAB
HOOK MADE FROM BENT PIN
1/32" PLYWOOD REINFORCEMENT
DETHERMALIZER HOOKS .032 WIRE
RUBBER BAND
FUSE
SOFT 1/8" SHEET FILL-IN ALL AROUND THE NOSE
T.L.
1/8" SQ.
1/8" SQ. MEDIUM HARD BALSA LONGERONS
POWER: SIX STRANDS 1/4" X 1/30" T-56 86" LONG
EIGHT STRANDS 3/16" X 1/30" T-56 86" LONG
SIX STRANDS 3/16" X 1/24" DUNLOP 86" LONG
APPROX. 47'
WIND ON 90 TURNS (REVERSED), FOLD IN HALF AND LET ENTWINE. FORMS MOTOR APPROX. 33" LONG
SIDE VIEW
1/16" X 1/8" SOFT BALSA UPRIGHTS & CROSSPIECES
REAR PEG 5/32" DOWEL
1/8" DOWEL
SOFT 1/16" X 1/8"
SOFT 1/8" SHEET FILL-IN
BOTTOM VIEW
1/8" SHEET
1/8" SQ.
SOFT 1/8" SHEET FILL-IN
SLOT AS SHOWN FOR A SNUG BUT NOT TIGHT FIT ON THE RUDDER KEY
TOP VIEW
1/16" DIA.
FRONT HUB PLATE .015 BRASS
REAR HUB PLATE .015 BRASS
PROPELLER HINGE .049 WIRE
REAR BEARING .015 BRASS
BEND PRONGS DOWN & FORCE INTO NOSE BLOCK
WEIGHTS
FUSELAGE 1.0 OZ.
WING .6 "
STAB. & RUDDERS .3 "
PROP. & NOSE BLOCK .7 "
RUBBER 2.5 "
COMPLETE AIRPLANE 5.1 OZ.
PLANS DRAWN BY: LEE RENAUD
PLANS TRACED BY: AUBREY KOCHMAN
SCALE IN INCHES
0 1 2 3 4 5 6 7 8 9 10 11 12

GET SET FOR NEW RUBBER RULES BY BUILDING THE BOSTONIAN: CONSTRUCTION SIMPLE, WITHOUT COMPLICATED CURVES

THE BIG MEETS IN REVIEW:

Free Flight A/2 Scale

Photos by Fud Takagi, Hank Thomas, Al Lewis



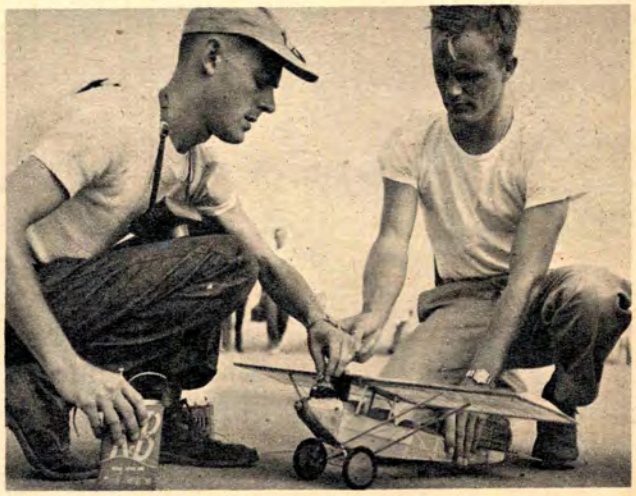
Edward Stoll of Detroit watches his Fairchild climb nicely after hand-launch start. Took 6th in Open.

Robert D. Bolling of Long Beach, 5th in Open flying, cranks up Wasp-powered D.H. Moth. Very realistic model; did biplane fans real proud.

Kenneth A. Aymar, Burbank, and all-aluminum foil covered P-51. Power was McCoy Diesel. 252 points for 2nd in Open. Every rivet simulated.

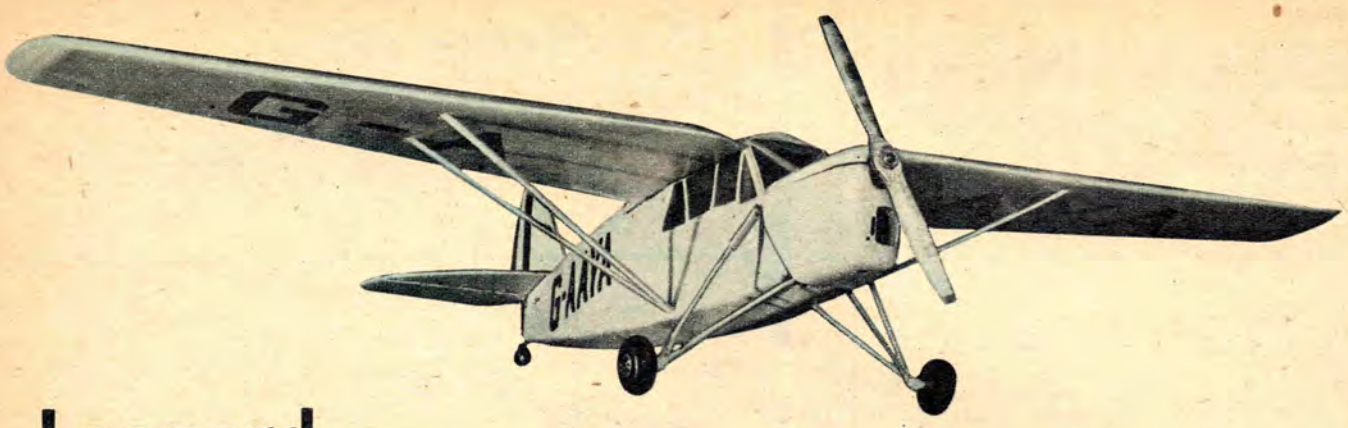
William Russo and Berkeley Stinson L-5 flying scale. Torp .035; 7th in Open. Half-A replaced rubber scale for first time at Los Alamitos Nats.

Delbert D. "Ek" Swartz, '49 rubber scale winner with 4th place Wasp Stinson 0-49 converted from rubber.



James C. Clover, LTJG USNR, San Diego, with his 10th place Pientenpol. Can you recall the original lightplane? Then you're gettin' on, Bub!

Far left: Walter (3rd place) Mooney's Honey Bee; nice ship, had engine trouble. Next: Wasp-powered Great Lakes by Cedrick E. Galloway, Burbank. Span, 26.8", 1" to 1' scale. Right: T. R. "Dick" Quermann, Fieseler Storch. Wasp powered; 200 sq. in., 9th place.



Leopard-Moth DH85

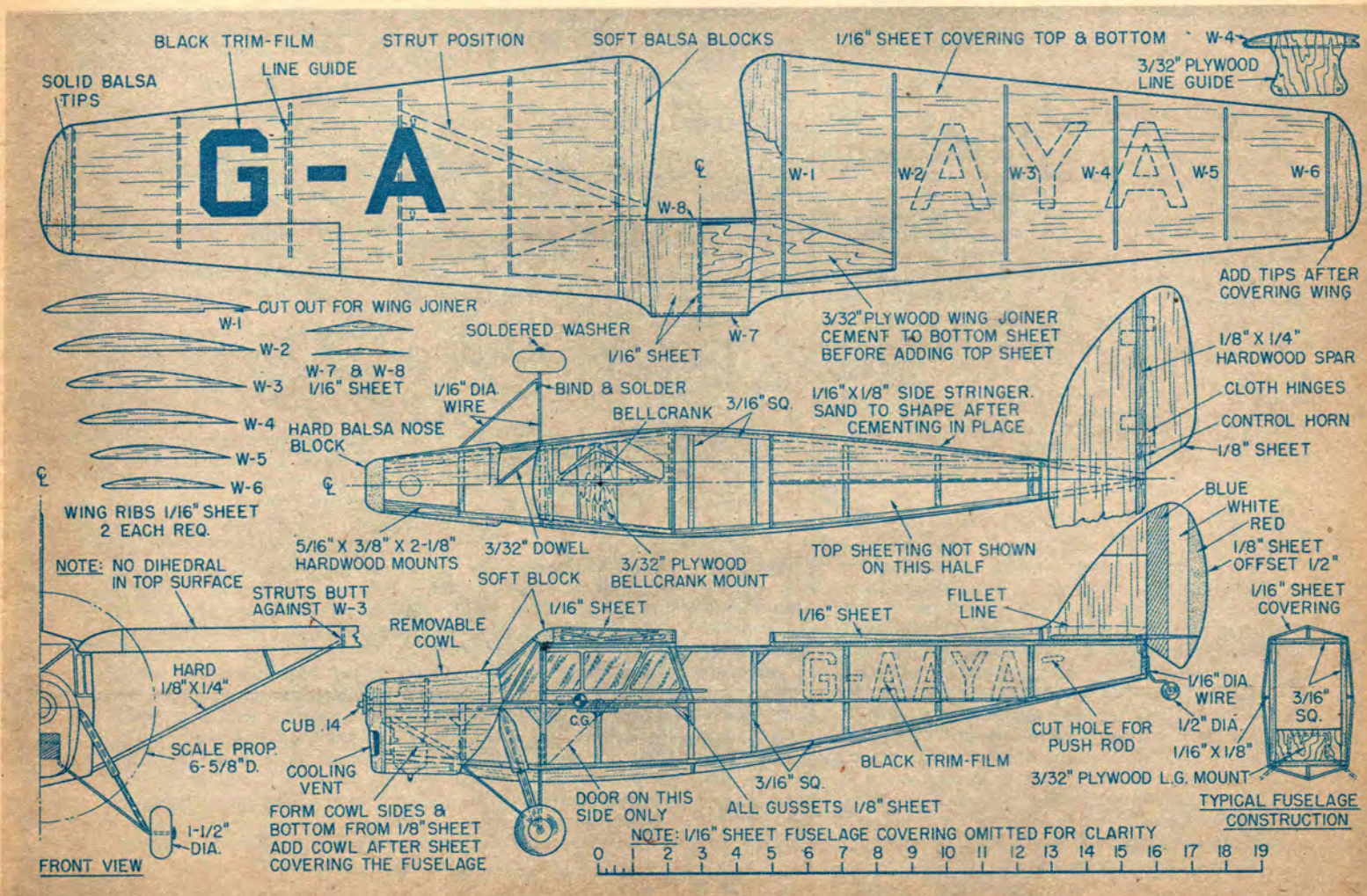
Calling all scale fans! An oldie-but-a-goodie is back as a real faithful control line replica

By AUBREY KOCHMAN

■ The *Leopard-Moth*, a hopped-up version of the famous "Puss," was produced in 1933, and on its first public appearance, piloted by its owner, Capt. Geoffrey de Havilland, won the King's Cup Race at an average speed of 139.5 mph. Incorporated in its design are all the lessons learned from the experience of several years' operation in all parts of the world, of the more familiar Puss-Moths.

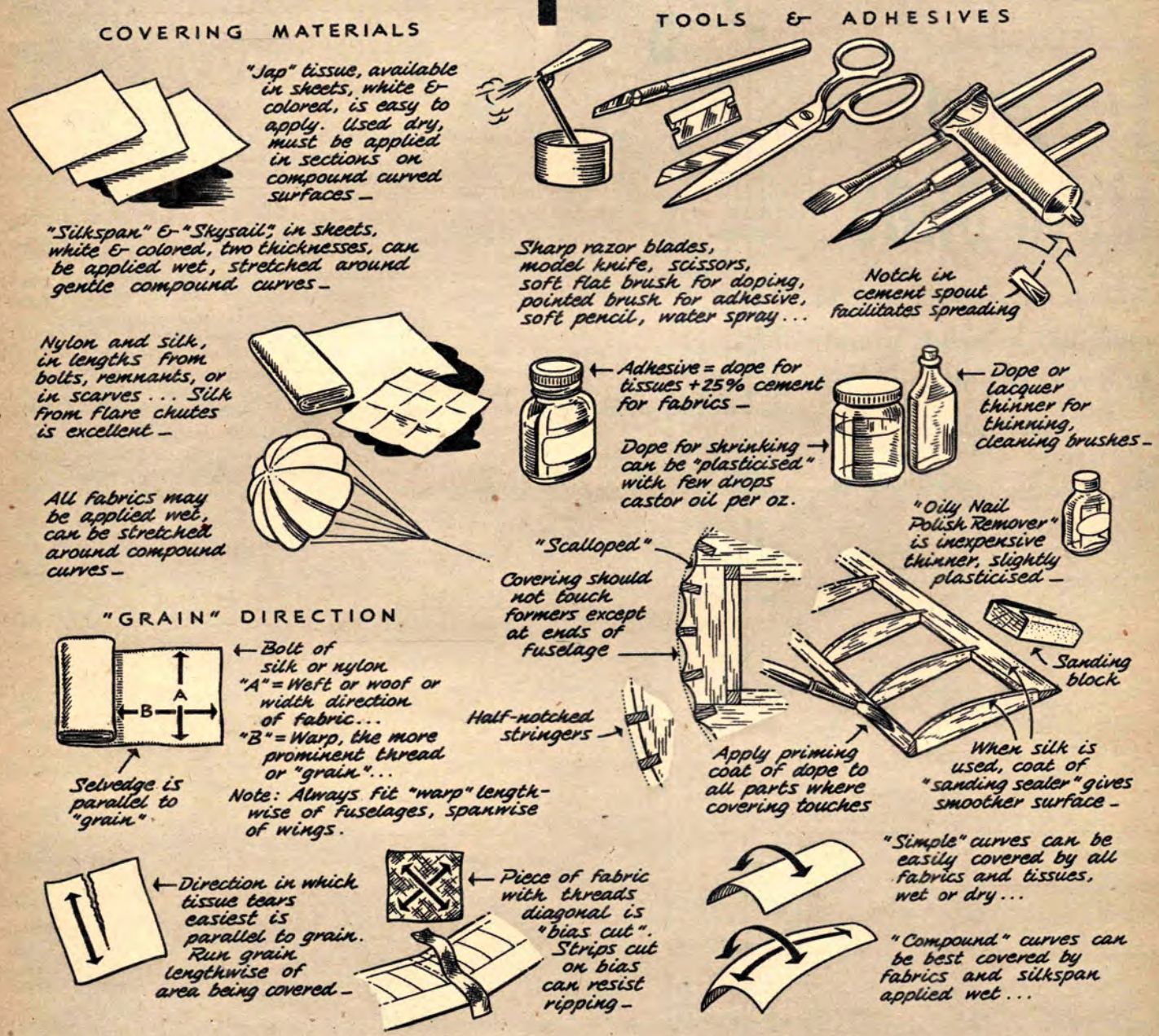
The model as presented was designed as a Class A control line job, mounting an inverted Cub .14. Sheet covering of the entire model results in a very rugged ship which more than makes up for the added weight. If care is taken in the selection of wood the additional weight can be held to a very few ounces.

The fuselage is constructed directly over the full-size plans. Pin the 3/16" sq. longerons in place and add the uprights, gussets and hardwood motor mounts. The second side is built in a like manner atop the first. When dry, separate and crack at the rear of the cabin. Cement the cross braces in place. Add the stringers and sand them to shape. Cement the bellcrank mount in place and add the upright braces. Bend the landing gear to shape. Secure the separate legs to the plywood mounts by either binding with Celastic, strong thread or using "J" bolts. With the last two, don't spare the cement when installing the gear. Celastic is a cement unto itself. For scale appearance, slip some 1/16" I.D. (*Continued on page* 70)



BEGINNERS' MANUAL

Covering and Finishing Tips . . .


COVERING MATERIALS
"Jap" tissue, available in sheets, white & colored, is easy to apply. Used dry, must be applied in sections on compound curved surfaces –
"Silkspan" & "Skysail", in sheets, white & colored, two thicknesses, can be applied wet, stretched around gentle compound curves –
Nylon and silk, in lengths from bolts, remnants, or in scarves . . . Silk from flare chutes is excellent –
All fabrics may be applied wet, can be stretched around compound curves –
"GRAIN" DIRECTION
A
B
← Bolt of silk or nylon
"A" = Weft or woof or width direction of fabric . . .
"B" = Warp, the more prominent thread or "grain" . . .
Selvedge is parallel to "grain"
Note: Always fit "warp" lengthwise of fuselages, spanwise of wings.
← Direction in which tissue tears easiest is parallel to grain. Run grain lengthwise of area being covered –
← Piece of fabric with threads diagonal is "bias cut". Strips cut on bias can resist ripping –
TOOLS & ADHESIVES
Sharp razor blades, model knife, scissors, soft flat brush for doping, pointed brush for adhesive, soft pencil, water spray . . .
Notch in cement spout facilitates spreading
← Adhesive = dope for tissues + 25% cement for fabrics –
Dope for shrinking → can be "plasticised" with few drops castor oil per oz.
← Dope or lacquer thinner for thinning, cleaning brushes –
"Oily Nail Polish Remover" is inexpensive thinner, slightly plasticised –
"Scalloped"
Covering should not touch formers except at ends of fuselage →
Half-notched stringers →
Sanding block
Apply priming coat of dope to all parts where covering touches
When silk is used, coat of "sanding sealer" gives smoother surface –
"Simple" curves can be easily covered by all fabrics and tissues, wet or dry . . .
"Compound" curves can be best covered by fabrics and silkspan applied wet . . .

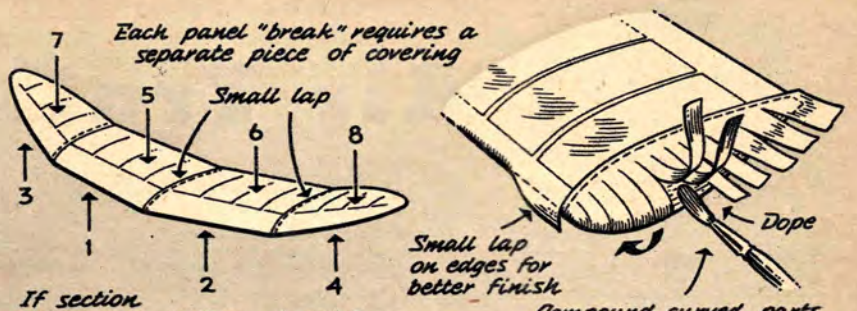
■ A good covering job can do wonders for an otherwise mediocre model and by the same token a poor job of covering can nullify the finest structural craftsmanship. Good covering not only goes far toward the appearance of a model plane but it likewise has a great bearing on its performance. Consequently the most successful aeromodelers set high standards in covering technique for themselves.

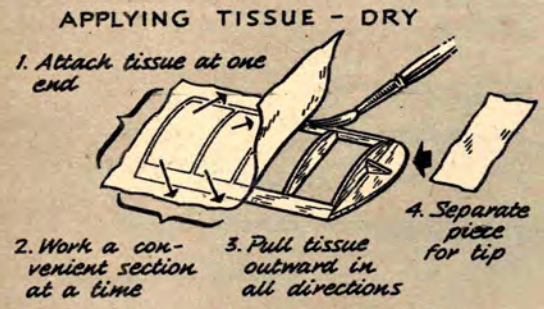
The earliest covering materials for model use were "bamboo" paper and a more recent "American bamboo," Jap tissue (which formerly was available in a superb superfine grade) and Chinese silk. In recent years the bamboo and American heavy grades of covering material have disappearred, having been replaced by "Silkspan"—the familiar material of tea bags—and "Skysail" which is very similar. These latter tissues are available in colors and in two weights. Latest addition to the list of covering materials is Nylon, which is extremely durable but requires special handling during application. Unlike silk, which usually shrinks a great deal when doped, Nylon must be pulled taut in the beginning to assure a satisfactory job.

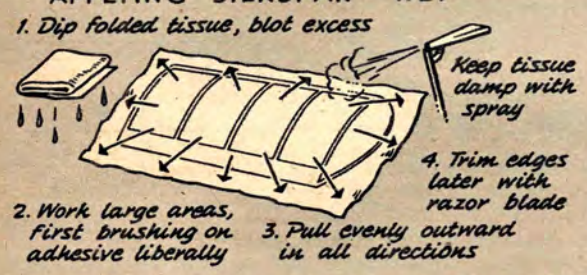
The characteristic of Silkspan and Skysail tissues which allows them to be moistened and handled without disintegrating has brought on the "wet" covering technique, held by many to be faster, easier and assuring smoother results than the usual dry covering method. The moist material may be somewhat stretched to smoothly cover bulged or compound surfaces, though not nearly to the extent to which silk or Nylon can be so handled.

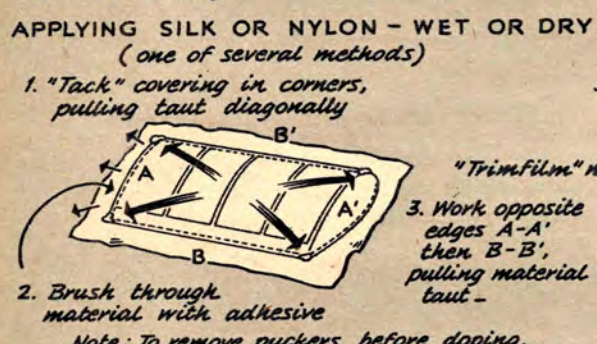
The model's covering skin can conceal a multitude of shortcomings in its internal structure, but the framework must

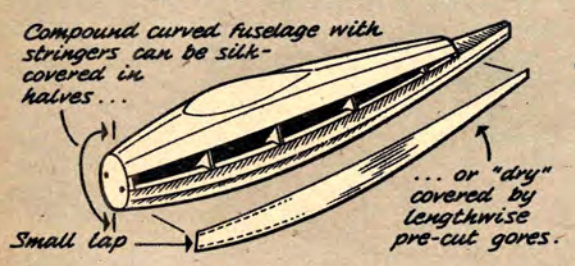
This informative section offers adjusting, flying tips and model improvements especially for the novice flyer. Tell us what other subjects you would like covered.

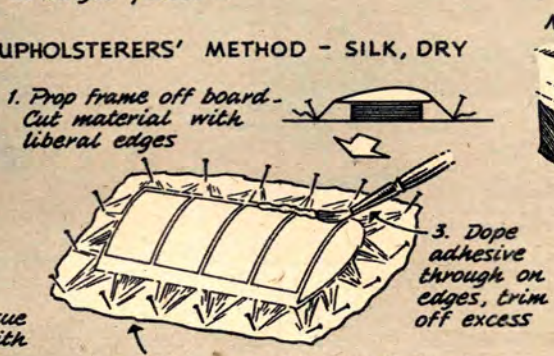

Each panel "break" requires a separate piece of covering
7
5
Small lap
6
8
3
1
2
4
If section is flat on bottom, 1 and 3, 2 and 4 can be combined in single pieces –
Small lap on edges for better finish
Dope
Compound curved parts (solid) can be covered by stripping tissue –

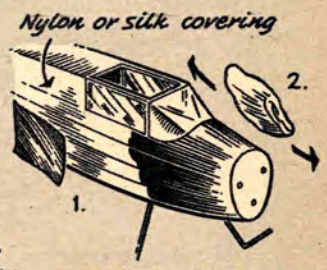

APPLYING TISSUE – DRY
1. Attach tissue at one end
2. Work a convenient section at a time
3. Pull tissue outward in all directions
4. Separate piece for tip


APPLYING SILKSPAN – WET
1. Dip folded tissue, blot excess
Keep tissue damp with spray
4. Trim edges later with razor blade
2. Work large areas, first brushing on adhesive liberally
3. Pull evenly outward in all directions

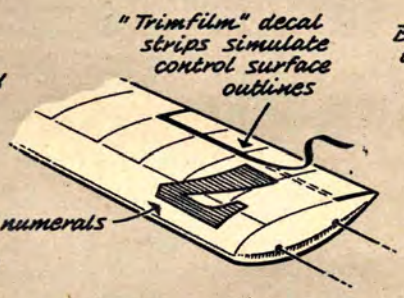

APPLYING SILK OR NYLON – WET OR DRY
(one of several methods)
1. "Tack" covering in corners, pulling taut diagonally
B'
A
A'
B
2. Brush through material with adhesive
3. Work opposite edges A-A' then B-B', pulling material taut –
Note: To remove puckers, before doping, loosen fabric with thinner, pull tight, then brush on more adhesive.

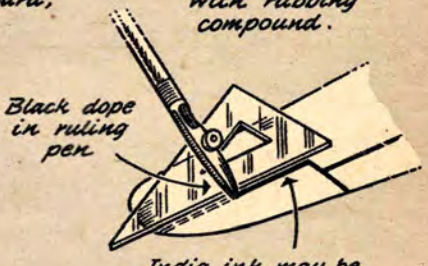

Compound curved fuselage with stringers can be silk-covered in halves . . .
. . . or "dry" covered by lengthwise pre-cut gores.
Small lap


UPHOLSTERERS' METHOD – SILK, DRY
1. Prop frame off board – Cut material with liberal edges
3. Dope adhesive through on edges, trim off excess
2. Drape material over frame, tack or pin excess to board, adjust tacks to remove all wrinkles –

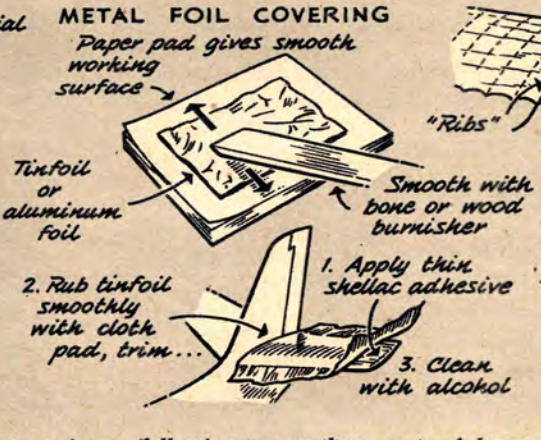


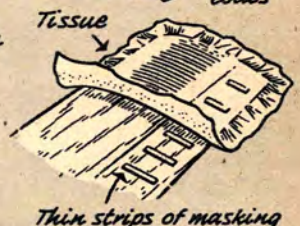
After doping: 1. Go over surface with fine garnet paper, 2. After color coats, polish with rubbing compound.





India ink may be used if surface is rubbed with talc so ink will "take" –


METAL FOIL COVERING
Paper pad gives smooth working surface
Tinfoil or aluminum foil
Smooth with bone or wood burnisher
2. Rub tinfoil smoothly with cloth pad, trim . . .
1. Apply thin shellac adhesive
3. Clean with alcohol



Thin strips of masking tape simulate ribs –

be strong enough to withstand the considerable stresses imposed by the taut covering. And the exposed frame surfaces to which the covering is actually attached, although covered, must be uniform and smooth to assure a workmanlike job. Sanding, doping and—when necessary—filling, prior to covering should aways be considered important steps.

Water shrinking, before the doping, is an extra aid toward a tight covering. In cases where light frames may be subject to warping, the water spraying is purposely omitted and dope is thinned considerably. Wet application of silk, Nylon or Silkspan eliminates need of further water spraying.

The first coat of dope on silk is often difficult to apply because it runs freely through the weave. By having the first coat of extra thick dope, this is made easier, though later coats should be thinned. Silk or Nylon should be closely inspected following two or three coats of dope; unless the weave pores are fully closed by the dope, more doping is in order.

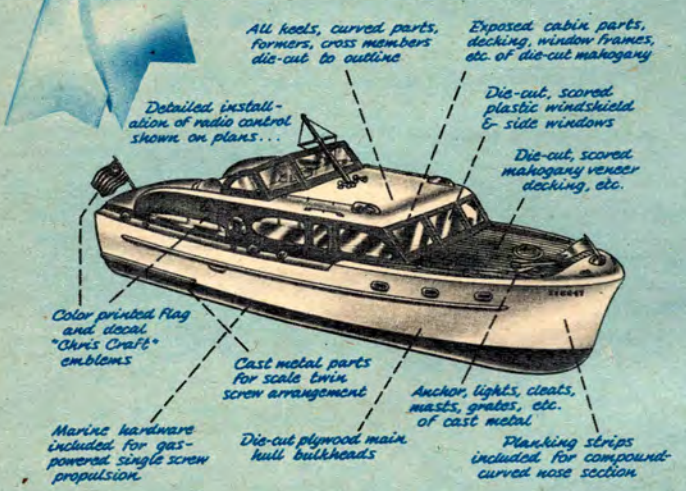
"Double covering" of Jap tissue or Silkspan is preferred by many who need a tough surface, as in control line and certain parts of large free flight models. With a single coat of dope applied to the first covering, a second layer is doped onto the first, sometimes with grain crossed, and the resulting two-ply skin, after further doping, is light and perhaps easier to manage than a silk covering job.

Thin covering material serves well as a grain filler when applied to solid or sheet balsa surfaces. The laps do not show and the thin tissue bridges the grain irregularities.

The popular "Best Finish" contests are likely misnamed, for no finish is better than the foundation covering to which it is applied.

BLUE RIBBON MODEL

Air Trails BLUE


All keels, curved parts, formers, cross members die-cut to outline
Exposed cabin parts, decking, window frames, etc. of die-cut mahogany
Detailed installation of radio control shown on plans...
Die-cut, scored plastic windshield & side windows
Die-cut, scored mahogany veneer decking, etc.
Color printed flag and decal "Chris Craft" emblems
Cast metal parts for scale twin screw arrangement
Anchor, lights, cleats, masts, grates, etc. of cast metal
Marine hardware included for gas-powered single screw propulsion
Die-cut plywood main hull bulkheads
Planking strips included for compound-curved nose section

Philly Catalina for R/Control

Sterling's Latest Takes Electric or Glow Power

■ It seems that every member of the Sterling line of boat kits is more "colossal" than the one before; flagship honors of the fleet have now been transferred to the latest addition, the 31¼" long Catalina. A product of Sterling Models (Philadelphia, Pa.), the new boat is a composite assembly of balsa, considerable mahogany plywood and veneer, and a bit of regular plywood, too. The mahogany is used on decking, cabin sides, etc., where it will contribute to the rich appearance of the finished ship.

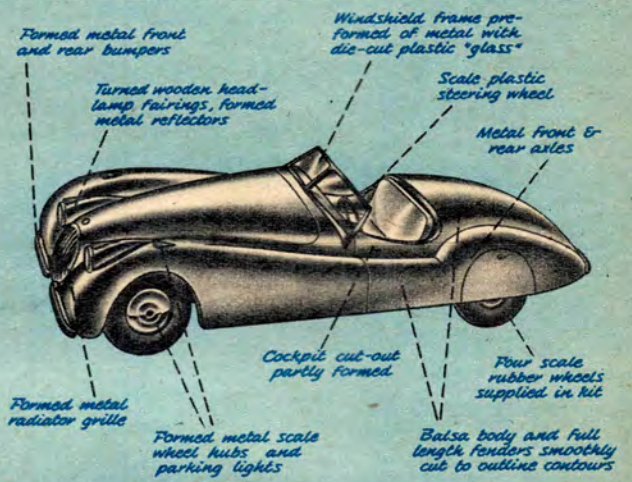
The kit sells for $11.95, complete with all parts needed to make a working model. If you want super-detail, there is a 66-piece scale fitting set, to be had for an additional $4.95. The latter fittings are optional on a working model but are a real must if you intend your Catalina to be preserved as a shelf model.

Construction starts logically with the keel, which comes in two parts that are cemented together. To this backbone are added the many bulkheads; some of these are solid (those toward the bow) but most of them are of skeleton form, to allow a cabin floor and space for propulsion machinery, radio-controlled unit, etc. If you care to do so, you can fit in all the interior accommodations to be found on the big Catalina. The plans show full details in drawings and pictures of the salon, staterooms, etc. Sides and bottom are of sheet balsa, with the compound curves in the bow area constructed by planking with balsa strips.

The boat may be driven by a glow engine—the plans show a K&B .19 installed—or by electric motor. Whatever you intend to use, there is ample cabin space for it.

The huge drawing (it measures 35"x44", and is crammed with information on both sides) includes full-size top and side views of the boat, many assembly drawings, pictures of finished model and the large boat, and thousands of words of instructions.

Appearance of the model is enhanced by Chris-Craft decals, a mahogany-framed windshield, and the many exact scale die-cast metal fittings.


Formed metal front and rear bumpers
Windshield frame pre-formed of metal with die-cut plastic "glass"
Turned wooden head-lamp fairings, formed metal reflectors
Scale plastic steering wheel
Metal front & rear axles
Cockpit cut-out partly formed
Four scale rubber wheels supplied in kit
Formed metal radiator grille
Formed metal scale wheel hubs and parking lights
Balsa body and full length fenders smoothly cut to outline contours

English Jag Comes Clean from Colo.

Nash and Chrysler Among Three F-B Auto Kits

■ One of a trio of car models just introduced by F-B Model Aircraft (Denver Colo.), the Jaguar XK-120 $1.49 kit works up into a 7" long copy of one of the hottest sports cars now seen in this country. The other two models in this series are the Nash Rambler Convertible, and the Chrysler Imperial Sedan; both sell for $1.69.

The plan sheet for each design includes full specifications of the big car. In the case of the Jag, this covers not only the details of the engine and chassis, but also instruments, seating, electrical equipment, spares and tools, and so on. This data can be very helpful to the builder who is interested in making a really accurate model.

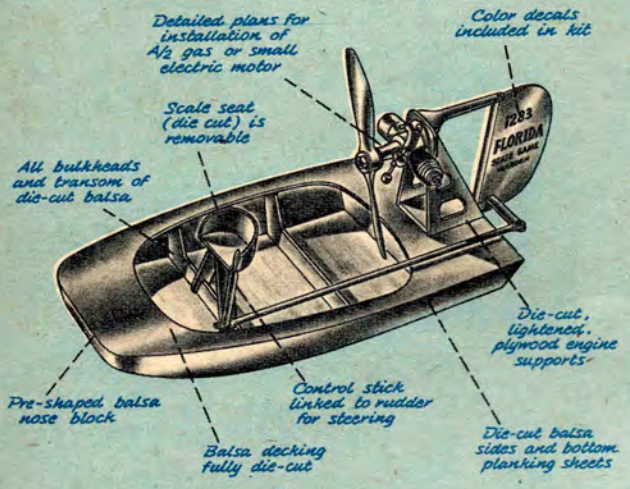
The body comes in three carved sections, the main body unit, and two outer pieces that are formed into the mudguards. All three are cut to correct side-view shape; the builder must round them off. The front wheel wells are hollowed out, you must cut the spaces for the rear wheels. The center portion of the main block is sawed and partly cut out, so that it will be an easy matter to make the seat and side doors.

Four rubber wheels of correct scale size come in the kit and the axles are straight lengths of 1/16" music wire. To give the metal disc wheel effect of the real car, discs are cut out of an embossed sheet of thin aluminum, and attached to the outside of the wheels. This same metal sheet furnishes stamped shapes for the radiator grill, windshield frame, bumpers, and various small parts. Another smaller sheet provides headlight frames. The headlights' bodies are made from hardwood turnings.

Die-cut acetate sheet provides glass for the headlamps, tail lamps, and for the windshield.

Plans show the assembly in steps, and include several views of the real car, that will enable the builder to copy the many small details which make for realism. The bottom of the kit box is finished in a scenic background, against which the car model may be displayed to full advantage.

RIBBON MODELS


Detailed plans for installation of A/2 gas or small electric motor
Color decals included in kit
Scale seat (die cut) is removable
All bulkheads and transom of die-cut balsa
Die-cut, lightened, plywood engine supports
Pre-shaped balsa nose block
Control stick linked to rudder for steering
Balsa decking fully die-cut
Die-cut balsa sides and bottom planking sheets

Warden's Water Buggy is Cute

Air Boat is Ready Sailor; Kitted by Cavacraft

■ For some years modelers have been building air-propelled water craft, but as far as we can remember they have all been just "free lance" designs. Now, in the new Everglades Game Warden Buggy by Cavacraft (Philadelphia, Pa.) we have an authentic scale copy of a widely used air-driven boat. For those few who don't know, the prototype of this model is used in Florida's huge swampy areas, where the water is too shallow and too weed-filled to operate normal types of boats. The swamp buggy has a draft of only a few inches, and is said to go even faster over the weed beds than it does in the open water.

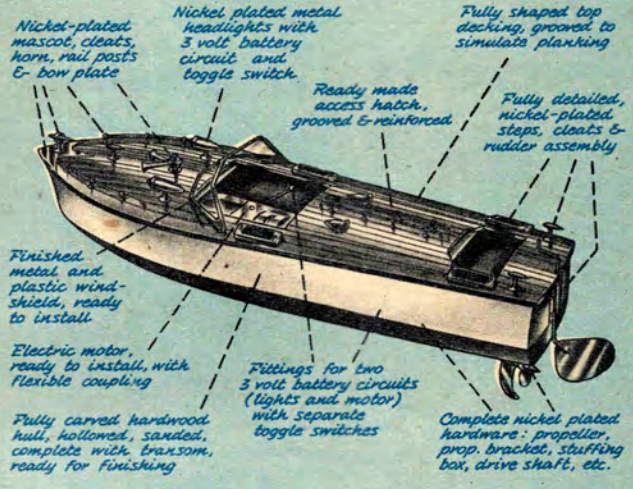
The kit is very simple to assemble and sells for the low price of $1.00. All parts are ready cut. The entire hull of the Buggy is built up from 1/16" balsa, with the exception of the nose block, which is a wedge-shaped piece of heavier balsa. The wood parts, incidentally, are of the highest grade stock, and the die-cutting is commendably sharp.

The hull sides, stern piece and nose block are put together first. Then the ribs and bulkheads are installed. The bottom planking is attached in three pieces, with the grain running across the boat. There is a partial deck, formed of two die-cut sections.

All parts for the motor mount at the stern are of thin plywood, and these, too, are ready cut. The motor mount is of the radial style, and of sufficient size to accommodate any of the Half-A engines. It is also possible to power the boat with a small battery-driven electric motor, though of course this won't give the "action" that you can get from a glow engine.

The kit includes parts for the driver's seat, and for the control system. The real swamp buggies are steered by an air rudder, and the same arrangement is duplicated in this model.

The plans include a large exploded view of the entire model, and a series of assembly drawings. Also a feature is decals of the markings used on the real Florida speedsters.


Nickel-plated mascot, cleats, horn, rail posts & bow plate
Nickel plated metal headlights with 3 volt battery circuit and toggle switch
Fully shaped top decking, grooved to simulate planking
Ready made access hatch, grooved & reinforced
Fully detailed, nickel-plated steps, cleats & rudder assembly
Finished metal and plastic windshield, ready to install
Electric motor, ready to install, with flexible coupling
Fittings for two 3 volt battery circuits (lights and motor) with separate toggle switches
Fully carved hardwood hull, hollowed, sanded, complete with transom, ready for finishing
Complete nickel plated hardware: propeller, prop. bracket, stuffing box, drive shaft, etc.

Workless Water Wonder

K&O's Electric Speedster is Really Prefabbed

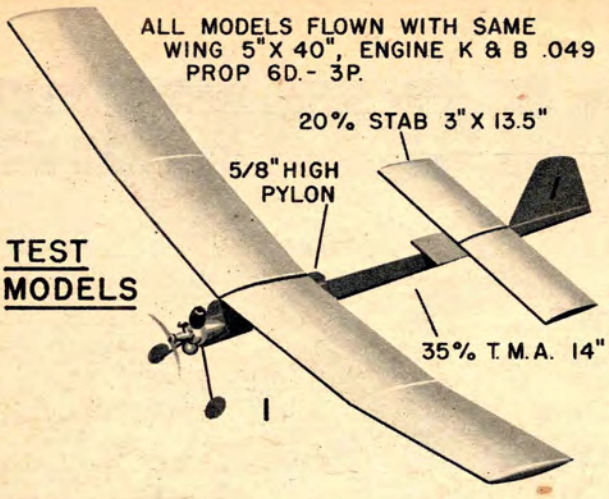
■ This is hardly a kit in the accepted sense, as practically all the work has been done for you. Even a real tyro should have little difficulty in building a fine-looking model from the parts furnished by K&O Models Inc. (Van Nuys, Calif). The kit is remarkably complete, in that there is a full set of metal fittings, an electric motor with all the required drive parts, a set of lights, switches, and so on. The complete outfit sells for $11.95.

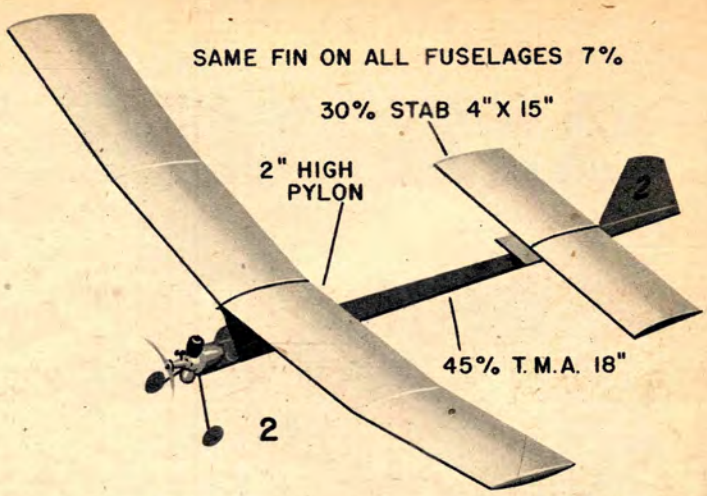
The 16½" long hull is completely carved and sanded ready for painting. There are four ready-cut deck ribs, which fit into notches in the hull sides. The deck itself is all in one piece and is completely cut to shape; the upper surface is scored to represent planking. Before the deck is installed, the many parts of the drive and lighting system should be fitted in and tested. No cutting tools of any kind are required to build this boat. Aside from finishing materials and cement, all you should need to build it are a small screwdriver, hammer, and soldering equipment—and even the latter is not an absolute necessity.

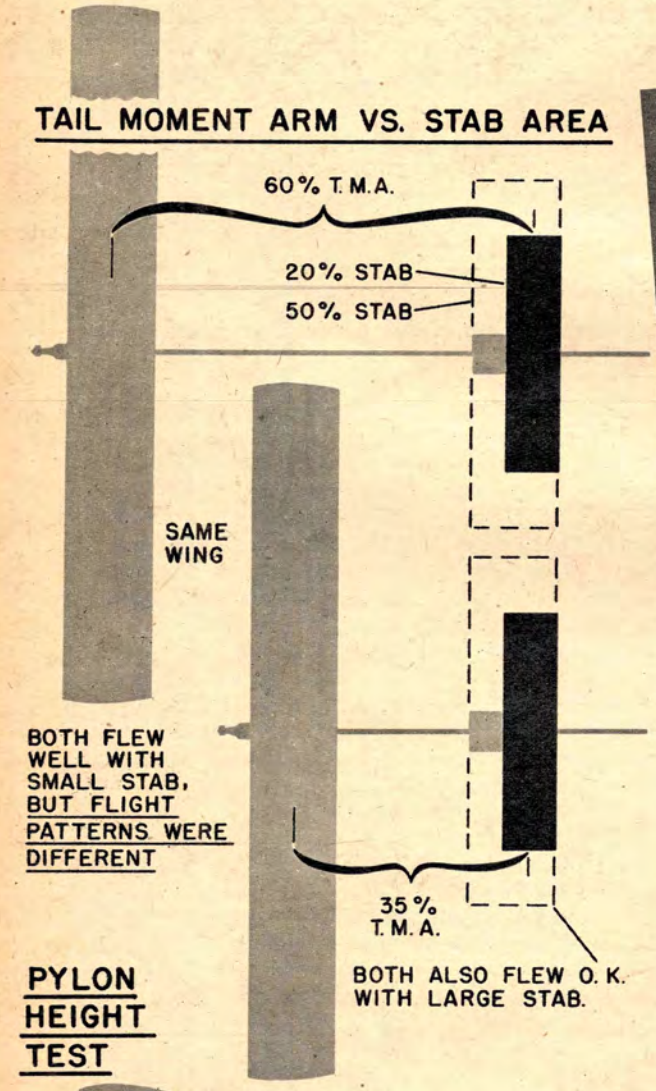
The countless fittings are very attractive and well-made. Such items as the twin horns, running lights and bow ornaments appear to be assemblies of turned parts. They are thus entirely clean and free of the "flashing" usually found on die-cast parts. All the fittings that go above decks—even the wire supplied for railing, are brightly plated.

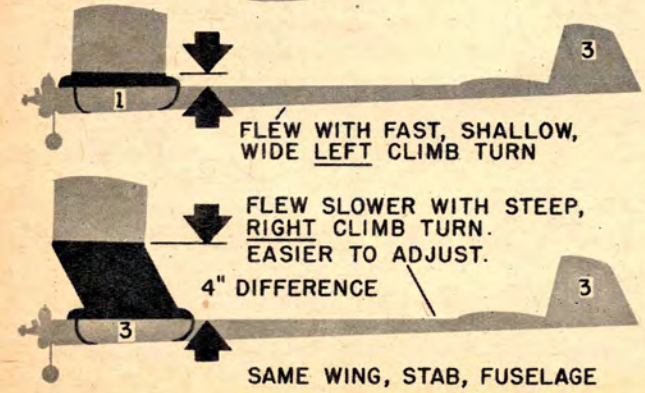
A special feature of the kit is the drive motor and associated parts. The motor is of the permanent magnet style, and drives the prop through a spring-type universal joint. Two sets of batteries are to be fitted into the boat; two cells are used for the working lights, while two more cells are added in series for the drive motor. All battery attachment fittings and switch parts are included, as is wire to connect them.

No hull assembly drawings are needed, but the plan and instruction sheet includes a full-size side view of the boat, plus wiring plans and fitting locations.






TAIL MOMENT ARM VS. STAB AREA
60% T.M.A.
20% STAB
50% STAB
SAME WING
BOTH FLEW WELL WITH SMALL STAB, BUT FLIGHT PATTERNS WERE DIFFERENT
35% T.M.A.
BOTH ALSO FLEW O.K. WITH LARGE STAB.


PYLON HEIGHT TEST
FLEW WITH FAST, SHALLOW, WIDE LEFT CLIMB TURN
FLEW SLOWER WITH STEEP, RIGHT CLIMB TURN. EASIER TO ADJUST.
4" DIFFERENCE
SAME WING, STAB, FUSELAGE

It don't mean a thing—

Confused by never-ending arguments on F/F design? Forget 'em! Here are facts!

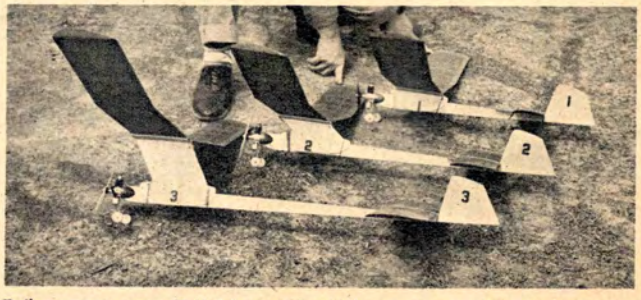
By FRANK EHLING

■ When you observe free flight models performing under high-speed conditions—as all our contest models do—do you know why this or that model behaves in its own peculiar way? When you see a model spiral up, the engine cut and the craft go into a graceful glide without dipping, you can be sure 99 times out of 100 the performance wasn't just plain luck!

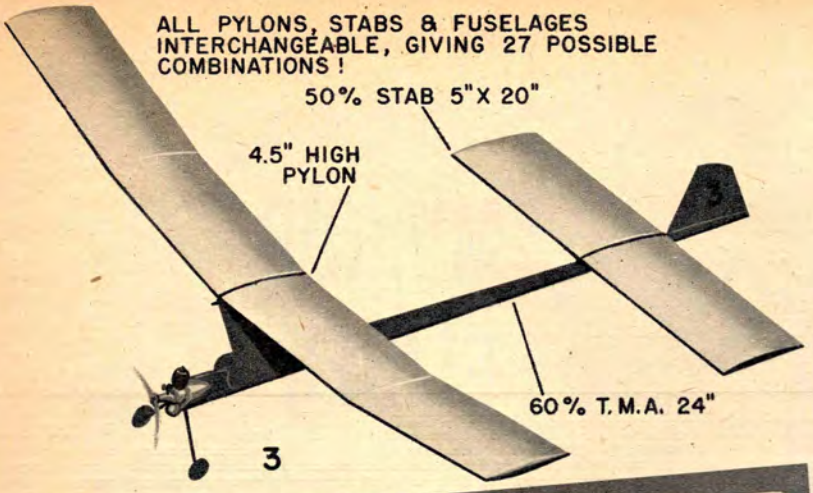
And it's not just one particular model that performs that way. How often have you seen a certain type turn in good flights time after time, yet another copy of the same design flown by another modeler produce either poor performance or continual crashes?

Free flight design isn't the deep, dark secret that you may have been led to believe. Yet who can blame the beginner for being confused after seeing Mr. P.G. fly his superb "long" job to a 6-minute flight, then turn around and witness Squire C. McC. get his "short" fuselage entry off to—you guessed it!—a matching 6-minute duration?

How can two such dissimilar free flights turn in the same desired high durations?



Tail moment arms (T.M.A.) varied widely on test models. Rudder numbers indicate fuselage length; wing saddle nos. show pylon heights.



if it ain't got a wing!

Picture the novice pondering: should the long fuselage model have a small stab, or a big one? How can these aforementioned champs design models that appear to be so far apart, yet each emerge as a consistent winner?

To show that extremes can be made to perform and perform well we developed three basic test fuselages using similar wings, rudders and engines and interchangeable stabilizers and pylons. The result was 27 different configurations. Stabilizers of differing areas were flown on the same fuselage. Each of the 9 different fuselage-stab combinations was tested with three different pylon heights.

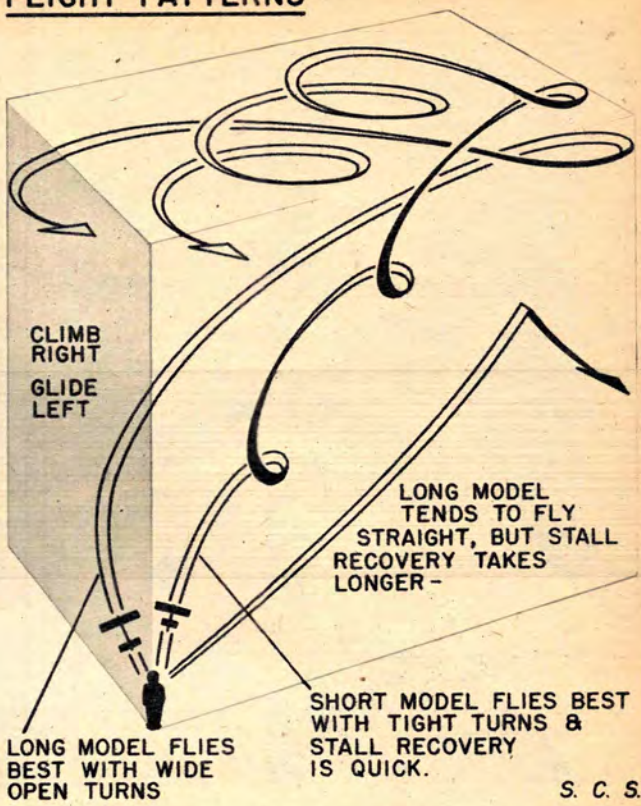
From the series of tests made *it became obvious that lengths, heights and area relationships are not as important as you may have been told!*

Apparent, also, were the important factors governing top performance: (1) the angular relationship of the wing, stabilizer and thrust line and (2) the center of gravity location.

These are the factors that can make or break a contest model. Refer to sketches of Models Nos. 1, 2 and 3. You can see there isn't anything close about No. 1 and No. 3. One could hardly ask for a shorter fuselage than No. 1, nor could you call for less stabilizer area or a stubbier pylon. On the other hand few designers would go to a fuselage longer than No. 3; they'd admit No. 3 has quite an increase in stab area and pylon height. These two set-ups represent the extremes—test models No. 1 and No. 27.

Extensive flight tests carried out (*Continued on page* 67)

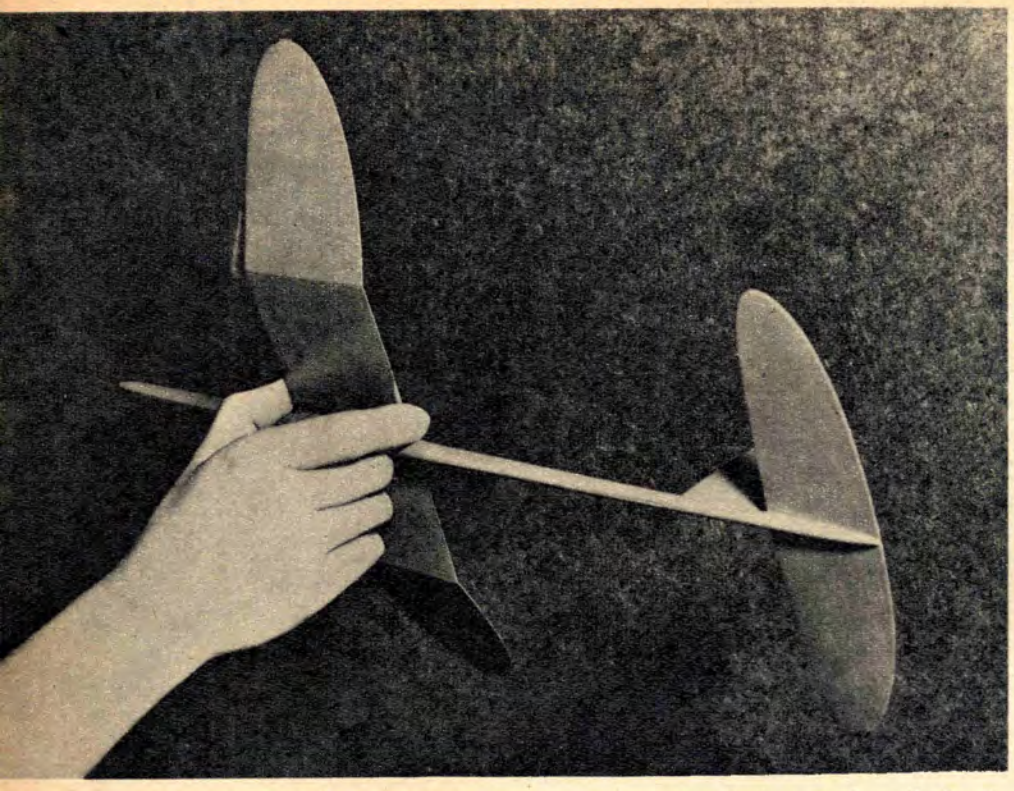
FLIGHT PATTERNS


CLIMB RIGHT
GLIDE LEFT
LONG MODEL TENDS TO FLY STRAIGHT, BUT STALL RECOVERY TAKES LONGER -
SHORT MODEL FLIES BEST WITH TIGHT TURNS & STALL RECOVERY IS QUICK.
LONG MODEL FLIES BEST WITH WIDE OPEN TURNS

S. C. S.

Ted Grzesczak, designer of the Joisey Hoister, collaborated in flight tests of the 27 (!) test variations.

Not the best picture in the world, but we'll have detailed configuration sizes in Part II scheduled for the July issue. See you then?



MIRROR GLIDER

Hey, fellows! This simple hand-launched glider makes a swell club trainer. It's the official design to enter in Mirror Model Flying Fair's new Exhibition event

For launching hold glider between thumb and second finger along fuselage. Forefinger (1st finger) placed against trailing edge of left wing. Wingtip points up. Snap forward and up like baseball.

■ With a single sheet of balsa wood 1/16″ thick, 3″ wide and 36″ long (a standard size carried by most hobby shops) and a 3-foot strip of balsa measuring 3/16″ by 3/8″, you can build two high-performance gliders. Either of the two designs shown will make a fine club glider or training ship. Models made from these plans will be eligible to enter the New York Mirror's Youth Glider Exhibition event at the 1953 Model Flying Fair next August.

First study the plans; read all the printed instructions. Notice that you can build a "V-dihedral" or a "tip dihedral" glider. If this is your first model use tip dihedral; it's easier, and later on you can make a V-dihedral version.

Trace the wing, stabilizer and fin (also called the "rudder") outlines on cardboard by placing carbon paper under the full-size outlines that run across both pages and thin cardboard under the carbon. Cut out the wing, stabilizer and fin patterns from the cardboard and you have "template" patterns. All you need do now is lay the templates on the balsa wood sheet, trace around them, cut out the parts and you're ready to start the assembly work.

For longest flights taper bottom of fuselage at the back as shown; with very fine sandpaper shape the wing to an "airfoil" section and reduce the thickness of stabilizer and fin. Cement in wing dihedral, cement stabilizer to fuselage (during this operation the fuselage is turned upside down!), then glue wing and fin in place, holding everything level and upright with scraps of balsa.

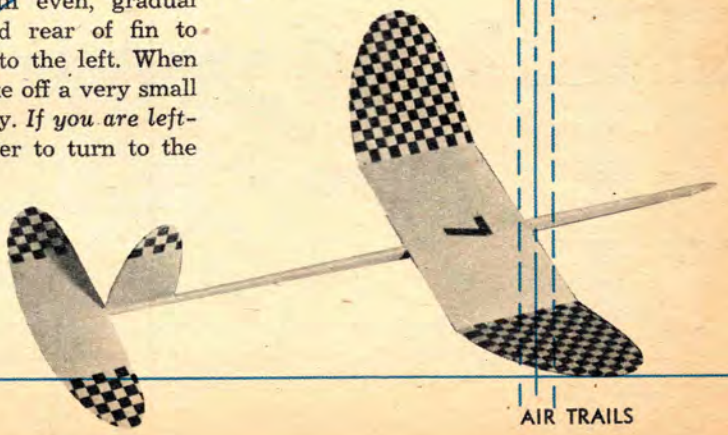
Cement in place the launch brace as shown at the trailing edge of the left wing—if you're right handed. "Lefties" glue it under the *right* wing next to the fuselage. For best flight performance dope your glider with one coat of dope thinned with an equal amount of thinner. When thoroughly dry re-sand with very, very fine sandpaper.

Balance glider as shown; add modeling clay until even, gradual glide results. Bend rear of fin to obtain slight turn to the left. When "turn" is added take off a very small amount of nose clay. *If you are left-handed* adjust glider to turn to the right. (If ambidextrous, the main thing is to be careful!)

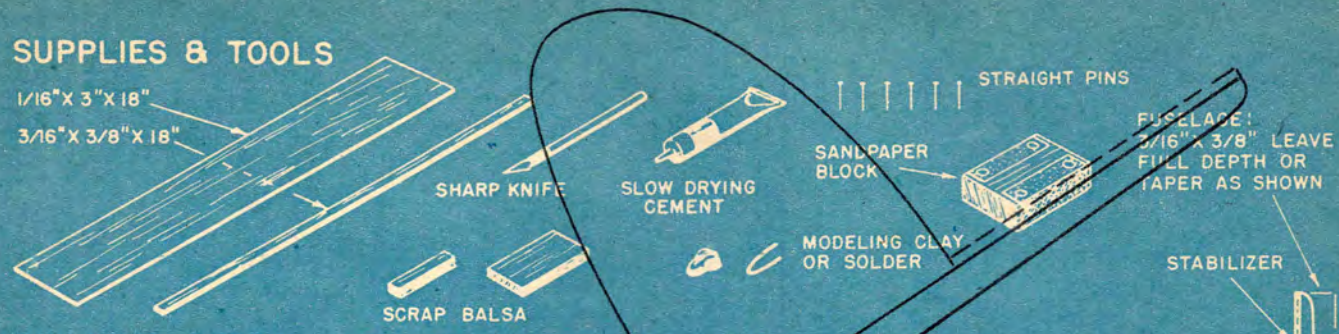
If these adjustments appear to be critical and a constant glide pattern is hard to maintain, add a tiny wedge under the rear of the stabilizer as shown. Check straight-ahead glide again to see if clay nose weight needs changing.

When your tip-dihedral glider is adjusted properly and you've been getting good flights, then try making a V-dihedral Mirror glider. Note that the V-model needs small balsa strips cemented to the fuselage to form a wing saddle.

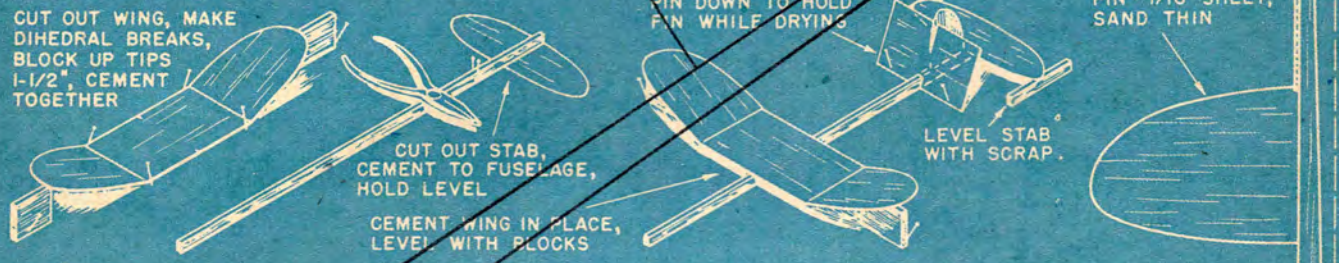
Then you can start a real flight test program to determine the more efficient design. Will it turn out to be the "V" or tip-dihedral glider? Write to the Editors and tell them of your findings.



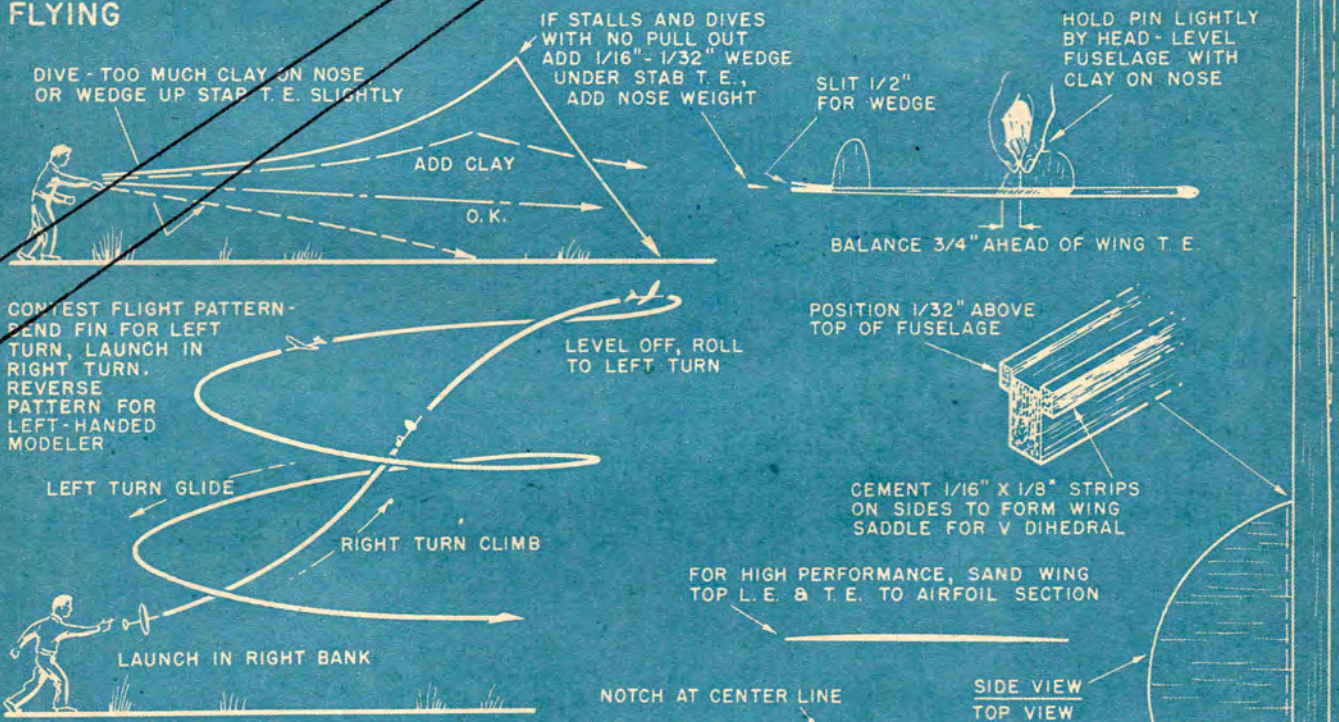
SUPPLIES & TOOLS



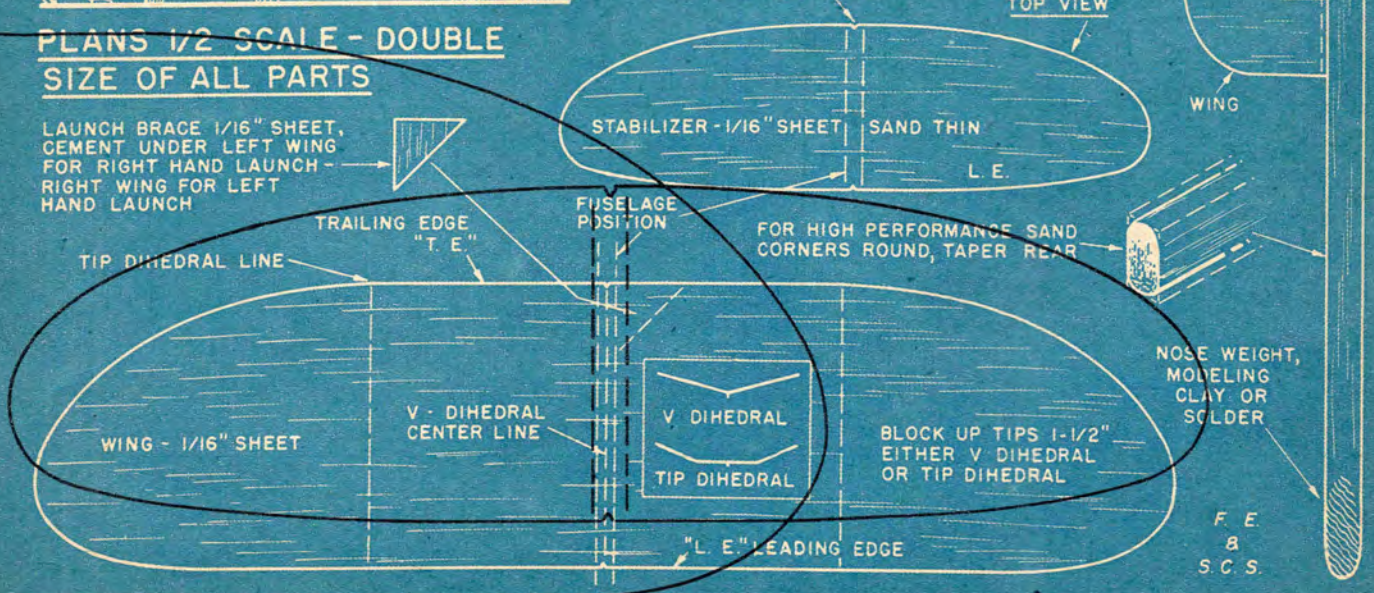
BUILDING STEPS


CUT OUT WING, MAKE DIHEDRAL BREAKS, BLOCK UP TIPS 1-1/2", CEMENT TOGETHER
CUT OUT STAB, CEMENT TO FUSELAGE, HOLD LEVEL
CEMENT WING IN PLACE, LEVEL WITH BLOCKS
NOTCH SCRAP SHEET, PIN DOWN TO HOLD FIN WHILE DRYING
LEVEL STAB WITH SCRAP.
STABILIZER
FIN - 1/16" SHEET, SAND THIN

FLYING


DIVE - TOO MUCH CLAY ON NOSE OR WEDGE UP STAB T. E. SLIGHTLY
IF STALLS AND DIVES WITH NO PULL OUT ADD 1/16" - 1/32" WEDGE UNDER STAB T. E., ADD NOSE WEIGHT
ADD CLAY
O. K.
SLIT 1/2" FOR WEDGE
HOLD PIN LIGHTLY BY HEAD - LEVEL FUSELAGE WITH CLAY ON NOSE
BALANCE 3/4" AHEAD OF WING T. E.
CONTEST FLIGHT PATTERN - BEND FIN FOR LEFT TURN, LAUNCH IN RIGHT TURN. REVERSE PATTERN FOR LEFT-HANDED MODELER
LEVEL OFF, ROLL TO LEFT TURN
LEFT TURN GLIDE
RIGHT TURN CLIMB
LAUNCH IN RIGHT BANK
POSITION 1/32" ABOVE TOP OF FUSELAGE
CEMENT 1/16" X 1/8" STRIPS ON SIDES TO FORM WING SADDLE FOR V DIHEDRAL
FOR HIGH PERFORMANCE, SAND WING TOP L. E. & T. E. TO AIRFOIL SECTION

PLANS 1/2 SCALE - DOUBLE SIZE OF ALL PARTS


NOTCH AT CENTER LINE
SIDE VIEW
TOP VIEW
WING
STABILIZER - 1/16" SHEET
SAND THIN
L. E.
LAUNCH BRACE 1/16" SHEET, CEMENT UNDER LEFT WING FOR RIGHT HAND LAUNCH - RIGHT WING FOR LEFT HAND LAUNCH
TRAILING EDGE "T. E."
FUSELAGE POSITION
TIP DIHEDRAL LINE
FOR HIGH PERFORMANCE SAND CORNERS ROUND, TAPER REAR
NOSE WEIGHT, MODELING CLAY OR SOLDER
WING - 1/16" SHEET
V - DIHEDRAL CENTER LINE
V DIHEDRAL
TIP DIHEDRAL
BLOCK UP TIPS 1-1/2" EITHER V DIHEDRAL OR TIP DIHEDRAL
"L. E." LEADING EDGE
F. E. & S. C. S.

Flying 8-Ball Clubbers Walt Billett (lt.) and Matt Sullivan (ctr.) hand-launch 8-B. Says Jim Walker, "Where're the control lines?"

No pusher, this! Wings, stab sweep forward. McCoy .49 power, air scoop under wing. Arnold D. Seligman, Louisville, Ky., is designer. Vents from cowl front to outlet above stabilizer.

DOPE CAN

■ The Top Flite Models folks who produce the Jigtime rubber-powered and jet-type assembly kits sponsored a model building program in fifth and sixth grades of a Los Angeles school. Detailed results were compiled on building time, previous modeling experience and the like. The T-F tycoons were quite pleased at the results: 93.6% of the students who tried their hand at modeling by tackling a Jigtime kit completed same. But some of the sidelights on the program were also of more than passing interest. To wit:

The teachers liked modelplane kits as a class craft project, each box contained all the necessary materials, they weren't required to assemble a lot of different types of supplies to get the program underway. Modelplane building perked up the classes, got the lads interested in geography, science, social studies, history, transportation. Not to be outdone, the gals in the classes started in heavily in handicrafts. The intelligence level of the novice modeler had little effect on the excellence of the finished model; the economic status of the modeler's family had no effect on who built the best looking models, or the ones which flew the longest.

A school model building program rekindled interest in aeromodeling among youngsters who had previously been building, many new modelers were recruited to the permanent ranks of airmodeling. Two model clubs grew out of the project. Many of the participants went directly on to more complicated types of models.

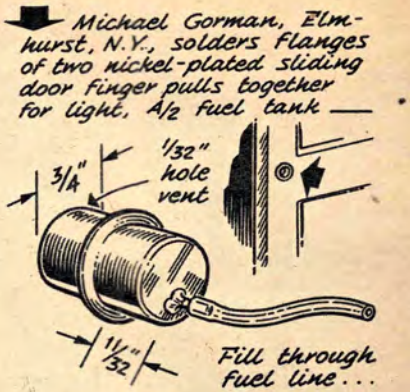
School officials and youth leaders can obtain detailed results of the school model building survey by contacting Top Flite in Chicago.

Eight-Ball Club Goes Big Time. Ever hear of the "Flying 8-Ball Club"? Been getting a lot of queries about it. This is the story. Back in 1946 the Academy of Model Aeronautics, which had limped through the war years on a very slender budget was getting set for the first postwar Nationals, renewing license numbers for ex-GI's, etc. It just seemed that everybody wanted the Academy to do everything; only thing—the where-with-all to carry on the A.M.A. program just wasn't. In other words, funds were mighty, mighty low.

While planning a trip to Chicago to attend a model trade show, Russ Nichols, then director of the Air Youth division of the National Aeronautic Association, and Al Lewis, recently returned from overseas AF service to his job as executive director of (*Continued on page* 52)

Sisters from one of Cleveland's schools display trophies (lt.) garnered by Bill Minck and (rt.) by school with most entries in Scale contest.

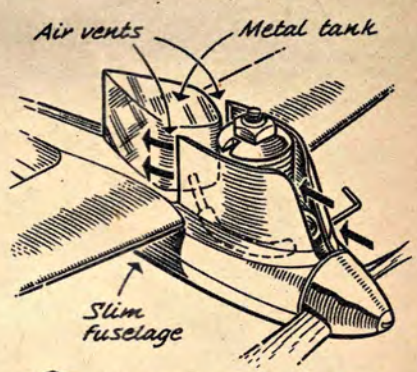
Sailplane from Pisa. This Italian towline glider model was made by Gronchi Pasticca. Magnificent photo, non é vero? This contributed by Signor Castellani Piero. No specs on the model.



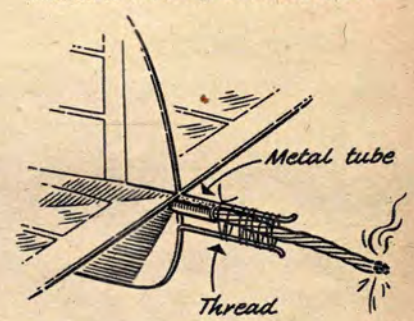
Michael Gorman, Elmhurst, N.Y., solders flanges of two nickel-plated sliding door finger pulls together for light, A/2 fuel tank

Sketch-book

Have you developed something new in construction, control or flying? Send a rough sketch—we'll re-draw it and pay $5 for each accepted. Contributions should be original ideas; because of the large number of entries the editors regret they cannot enter into correspondence regarding Sketchbook submissions.

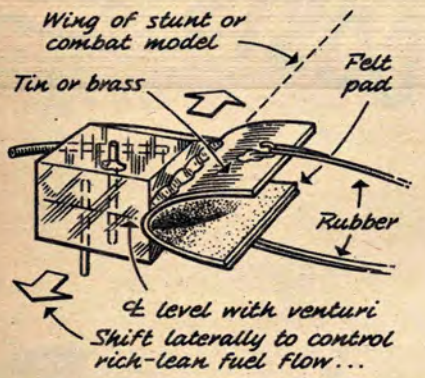


Ultra-compact A/2 racer uses rear cowl space for fuel tank in neat design by Howard Wisck, Baltimore, Md.

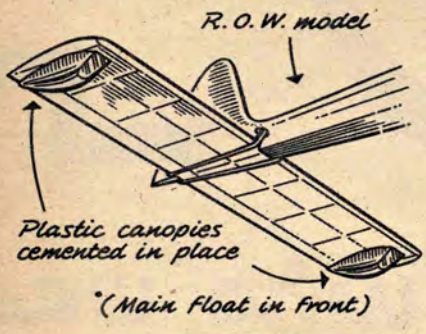


14-year-old Wayne Harvick, Castlegar, B.C., Canada, finds thread handy for binding dethermalizer... holds tail firmly, burns through easily.

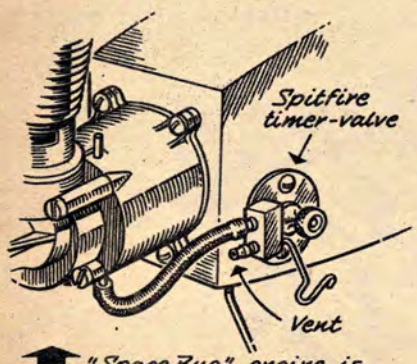
Fine propeller-carving tool and utility knife can be made from old straight razor says Bud Miller, Camarillo, Calif. —



External tank fits next to fuselage on wing leading edge; easily salvaged in combat crack-ups according to Bill Meier, Salem, Oregon —



Seaplane enthusiast James Leveque, Lake Charles, La., solved tip float problem simply. Canopies are light, not easily punctured, perfectly streamlined —



"Space Bug" engine is rigged for freeflight limited engine runs by George Helmsdoerfer, San Francisco, Calif., by controlling venting.

Model helicopter snapped at Tucson. All balsa construction; Torp .049 power. Everett reports, "Hovered good until engine sagged. Didn't get the builder's name. Most stable." Who made it?

Watch Out, L.A.! Here Comes Everett

■ Model activity has started off with what will undoubtedly prove to be the busiest and biggest contest season yet. A lot of this activity stems from the impetus the Nationals gave our sport.

Now that your correspondent has moved to Pomona and closer to the Los Angeles hub of activity, we can readily appreciate the problems the fellows have and also understand more and more the importance of the Sepulveda Basin. Free flight fields are few and far between for those models which "take off" in a thermal. The U-control flyers are much more fortunate; most small towns have fields adequate for this type of flying, some towns even having special areas set aside for this purpose. In nearby Ontario we found two U-control circles with plyon bases permanently in. Although not too well suited for large contests due to lack of a ready-pit area, site has, nevertheless, paved areas for take-offs; nearby is a track for cable race cars. One large area near the Kaiser Steel Mill would be good for small free flight events. Camp Haan and the "Basin," though, are the only suitable areas for large contests.

The engine manufacturers are close by, Cameron being only ten minutes away, Atwood and Holland each are 20 minutes from home, Cox, K&B, McCoy Products, all within one hour. This is really good for the serious model builder who insists on good equipment, for it enables him to keep his "mills" in top running condition.

Jack Chounard's AJ-1 Savage built from a Boikley kit. Powered by two Mac .09's; Aero Gloss finish. Two 6/6 Power Props. Flew swell, says Dick; only change was added ribs and silk coverings.

Speaking of engines, Bill Atwood's new .049 and .051 are really hot. The .051 allows modelers to enter both Half-A and A with the same ship, and since it fits the Wasp and Royal .049 mounts, the old ship in a lot of cases will do. We used one in Phoenix and it really puts out. Again speaking of engines, Bob Holland has those beautiful Wasps really churning for fair. We saw several do over 15,000 on the first tank. Several fellows including Sal Taibi had Space Bugs in their Half-A's at Phoenix. They didn't put them out of sight, but almost. Most fellows are building from 220 to 260 squares for these mills.

The king-size Annual Southwestern Regional Contest was, for the second straight year, plagued by bad weather. After having dreamy days for weeks on end before and after, this one weekend just had to be sour. How the local Phoenix boys managed to put on such a swell contest in spite of the wind and rain is beyond us. True Arizona hospitality was the order of the day and everyone admitted that in spite of the weather the contest was well run.

Small Dale, big deal. Dale Everett holds Dan Lutz's B-C job. Sailplane wing and tail. Silk faired pylon, silked fuselage. First place winner in Phoenix. Uses Torps. Weighs 37 oz.

This year's, the 3rd, was well attended, with Don Alberts from Alburquerque, fellows from El Paso, Speed Wilson from San Diego. Tucson was very well represented, also Long Beach, Los Angeles, Pomona and Mentone—truly a big contest,

In spite of the Phoenix gang accusing us of taking the weather over with us, the contest started off with a bang, with several six-minute maximums—Jack Oxley, Wayne Ross and Jerry Robertson, to name a few achieving same. We saw some very nice flying; one flight in particular which we watched with more than a casual interest was Jerry's with his El Nordo.

He got the ship up high during tow, right into a thermal. The ship got off smooth and made one of the prettiest flights we have ever seen. Those of you who have watched real soaring gliders could really have appreciated this one, for it sure looked real, the way she wheeled into the wind climbing on every turn. When the tail popped she moved into the wind and settled down flat.

Wayne Ross (*Continued on page* 50)

Bill Kresek's semi-scale helicopter which weighs in at 6 ounces. Wasp is used as power. Test hops were most promising, needs only a prop tailored to engine and vertical operation.

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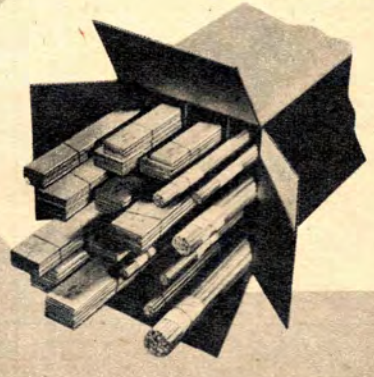

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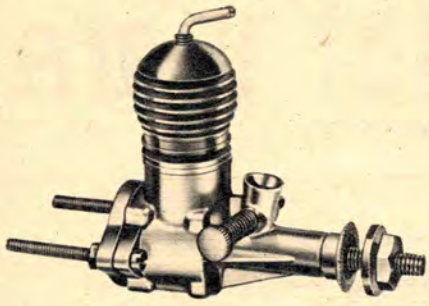
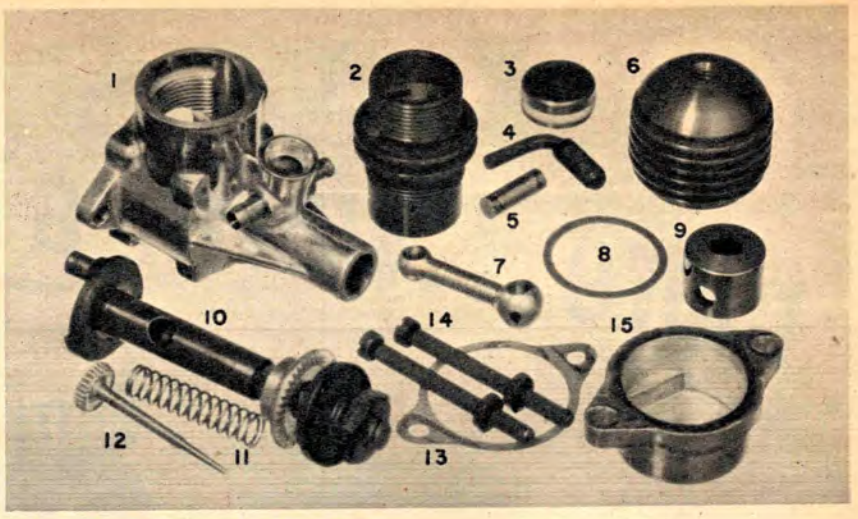
MOTOR OF THE MONTH





McCoy Diesel

Look at what the "Mac" works have come up with—an .049 compression ignition baby for Half-A!

■ Model "diesel" or compression engines have been very popular in Europe and England since World War II but have had a tough time competing with glow plug engines in the U.S. Up to now diesels built in this country have been heavier for their power and harder to operate than glow engines. However, the new McCoy .049 Diesel can well mark the beginning of a new era in American modeling.

Free flight fans will be impressed with easy starting and smooth running in the low and medium speed range, with greater power than most glow engines of equal size and weight. Also once again an old friend, nitrate dope, can be used for strong, light structures. The little C.E. Mac is more sensitive to adjustment in the high speed range, yet delivers terrific power for control line, sport and speed. Control line scale will also benefit greatly.

The McCoy Diesel is sharply marked by a bright red cylinder head that covers the cylinder down to the exhaust port and carries six fins. A compression adjusting lever protrudes out of the top where one has come to expect a glow plug. With the exception of the compression lever, this Diesel looks very much like any other Half-A glow plug engine in size and general construction. Fuel and air enter through a front rotary valve fitted with a conventional needle valve. Radial mounting lugs are cast at the rear of the base.

Internal construction is quite different from the usual Half-A. The hardened steel piston is very short and of large diameter with a thick wall at the wrist pin. An aluminum connecting rod is used that looks big enough for a .19 displacement engine. This is fitted with an ⅛" diameter bronze wrist pin. The crankshaft is heat treated steel and carries the rotary valve. At the top of the cylinder is a compression insert or contra piston used to vary the compression ratio by means of the adjusting screw. A plastic seal that looks like a small doughnut or "O" ring is used to seal the contra piston. The engine tested had an excellent piston and cylinder fit. At a high compression setting there was practically no leakage when turning the engine over slowly by hand.

Starting was extremely easy with either a 7/4 or 6/4 heavy propeller. Best results were obtained by reducing the compression one-quarter turn and priming the exhaust with one or two drops. Starting hot gave little trouble. Operation is a little harder with very small propellers due to their lack of weight. With a 5½/4 propeller starting seemed best by choking for two turns and reducing the compression one-quarter turn.

If the engine kicks hard and becomes stubborn it is due to an accumulation of oil in the cylinder. Do not reduce compression further under these conditions, but blow through the exhaust, flip once and blow again to remove the excess oil. Adjustments are very broad in the low and medium speed range and there is no tendency to knock. At high speeds adjustments are more critical and the engine will knock if not adjusted properly.

McCoy Diesel fuel supplied by the manufacturer was used during the test. Two other fuels were tried with inferior results in starting and running. The McCoy fuel has a thin oil that gives very little trouble as far as blocking compression and kicking back are concerned.

Parts Illustrated

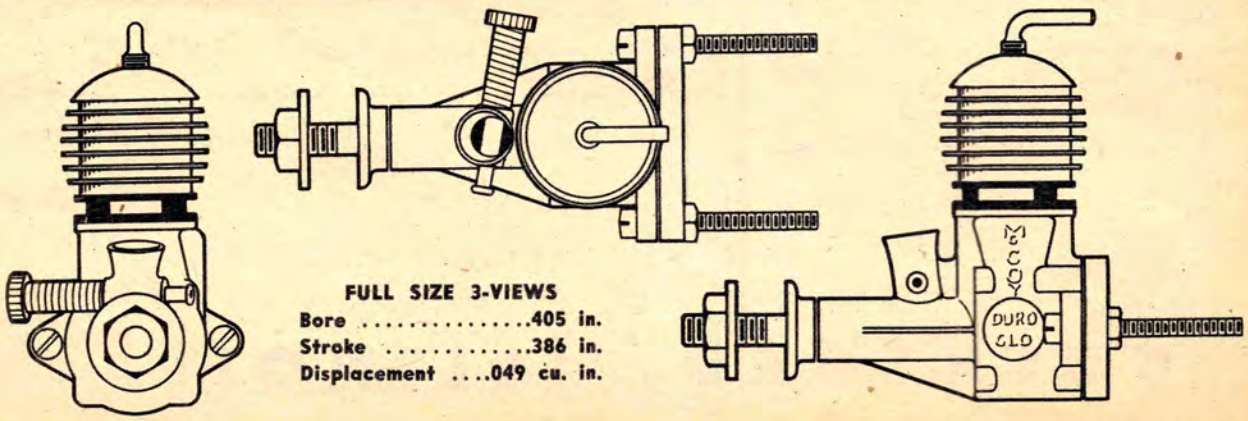
1. Crankcase: die-cast aluminum. .29 oz. 2. Cylinder steel, .407" bore x .837" long, .24 oz. 3. Contra piston: steel, .406" dia., .07 oz. Seal: plastic, 1/16" thick. 4. Compression adjusting screw: steel, 6-40 N.F. thread. .03 oz. 5. Wristpin: bronze, ⅛" diameter, .02 oz. 6. Cylinder head: aluminum, .16 oz. 7. Connecting rod: aluminum, ⅝" long, .02 oz. 8. Cylinder gasket: fiber, 1/64" thick. 9. Piston: steel (hardened), .407" dia. x .325" long, .09 oz. 10. Crankshaft: steel (hardened), .218" dia. shaft, ⅛" dia. crankpin, .27 oz. Drive Washer: aluminum, ½" dia., .02 oz. Propeller washer: steel, ½" dia., .05 oz. Nut: steel, 8-32 N.C. thread, .03 oz. 11. Needle valve spring: steel, .01 oz. 12. Needle valve: brass, 1-72 N.F. thread, .02 oz. 13. Back cover gasket: Vellumoid, 1/64" thick. 14. Mounting bolts: steel, 3-48 N.C. thread, .07 oz. 15. Back cover plate: die-cast aluminum, .11 oz.

Engine Data

Performance. Weight: 1.5 oz. Propellers: 7/4 wide blade wood, 8,500; 6/4 wide blade wood, 11,500; and 5½/4 plastic, 16,000 rpm. Well broken-in Mac Diesels produced the folowing: 6/3 Plasticote, 16,250; 6/4 Top Flite, 14,500; 7/4 Top Flite, 11,000-11,500 rpm.

Design Data. Displacement: .049 cu. in. Class: Half-A. Stroke: .386 in. Bore: .405 in. Stroke bore ratio: .93. Compression ratio head: variable. Compression ratio base: 1.52. Port area intake: .0129 sq. in. Bypass: .0145 sq. in. Exhaust: .0318 sq. in. Ignition: High compression.

Construction Features. Bearings, crankshaft, aluminum; crank pin, aluminum; wristpin, brass. Fiber lock nut on adjusting screw. "O" ring contra piston seal.



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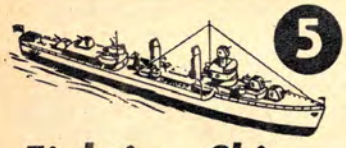

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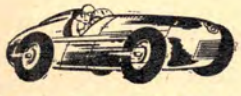

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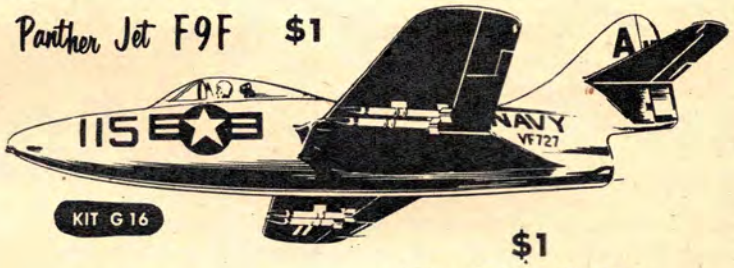

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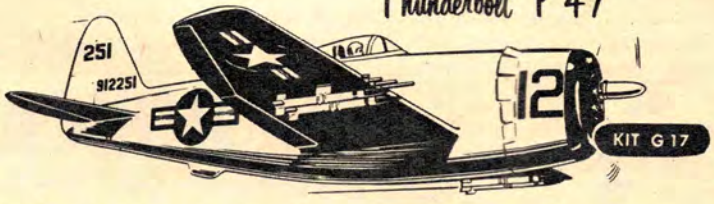

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(*Continued from page 45*)

glued his two-piece wing together on his Nordic and mounted it on top of his fuse, after his disaster at Tucson. The wind made it hard to handle under tow but he still managed to win open glider.

The winners, who we can also say managed to conquer the weather, were: Half-A —Harry Gould, Long Beach. Class A & Class B—Jack Oxley, Long Beach. Class C —Dan Lutz, Los Angeles. Jr. Half-A—Don Berry, Phoenix. Jr. ABC—Leo Carrillo, Tucson. Open Towline and Rubber—Wayne Ross, Phoenix, with Harry Robertson 2nd. Jr. Towline—Jerry Robertson and El Nordo II to a new Jr. record. Hand Launch Gliders—Dave Nelson, Tucson. Open Stunt —Ray Downs with 402 points. Jr. Stunt— Frank Townsend, Jr., Tucson. Flying Scale —Paul Johnson, San Berdoo, with a Berkeley FJ-1.

In combat Frank Townsend, Jr., repeated his Tucson conquest. Jimmy Stewart won both A Jr. & B Jr. speed. A Open was won by Ed Bollin, B by Walt Johnson of Phoenix, C by Roy Downs, D by Don Strouffe of Phoenix.

Frank Townsend, Jr., won Jr. Sweepstakes and a G.E. clock radio, while Jack Oxley won the same prize in open.

The San Diego Aeroneers are again an active club, writes George Wagner who is their Veep and CD. In their first contests Dick Sladek and Butch Corbely have been fighting it out for high time, with the rest of the club following behind.

It was very pleasant to receive letters from various model builders in regard to the coming Wakefield and F.A.I. eliminations, three in particular from Earl Witt of the Northwest Associated Modelers, Lyman Armstrong of the Twin City Model Association and from Joe Bilgri. We had sent out a feeler as to what the fellows wanted and found these three especially right on the ball—their letters came back by Airmail.

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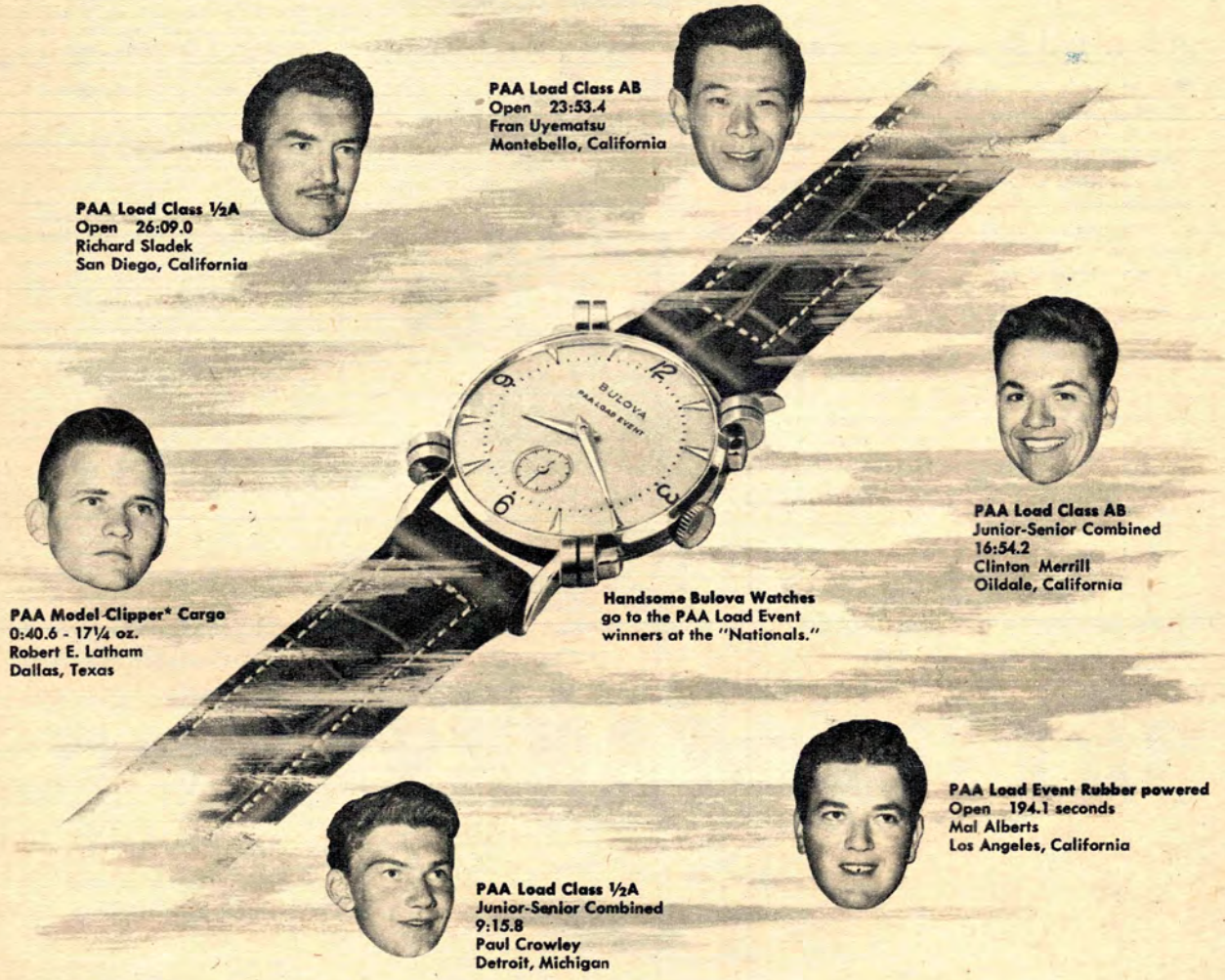

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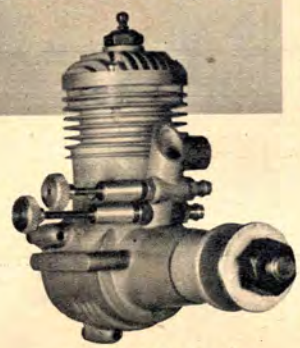

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Dope Can

(Continued from page 44)

the A.M.A., hit upon the idea of giving a set of large sterling silver wings to anyone who made a contribution to the Academy. Some rather large, but very impressive "wing" emblem pins were found in a dusty corner at NAA. Seems that they'd been there for years—many years. In fact, the pin consisted of an eagle with outstretched wings holding a shield in his talons upon which appeared the letters "FAI."

How to cover up that "FAI"? A celluloid 8-Ball pin turned up, the 8-Ball was cemented over the "FAI" lettering and thus en route to Chicago the first 100 Flying 8-Ball Club pins were turned out by Messers. Nichols and Lewis.

The plan worked like a charm. Considerable cash was raised from interested individuals to tide the A.M.A. over the post-war humps; each donor got a handsome 8-Ball pin.

With the renewal of international competition flying the Academy has been faced with the problem of raising funds to send American model aero teams abroad. So once again the Flying Eight-Ball Club is going full blast. A special "Old Timers" division has been created within the 8-B organization largely through the untiring efforts of Mattie Sullivan, the Nylon & wire magnate. The Old Timers are sparkplugging a fund raising drive and soliciting memberships in the F.E.B.C. (For dope on membership in the Flying Eight-Ball group write the club c/o Air Trails).

All current and former members of the Eight-Ball Club—all individuals in possession of a membership card—are requested to advise Walt Billett in Minneapolis, Minn., at 2548 Nicollet Avenue. He is setting up a permanent membership registration list.

Let's Go to Press. Terry Kelly, 1110 Garson Rd., Sudbury, Ont., Canada, wants CAP

(Continued on page 54)

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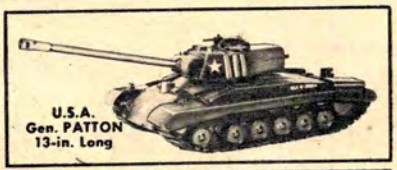

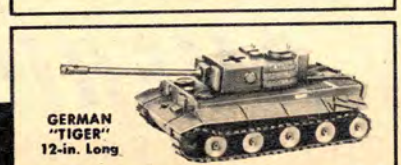

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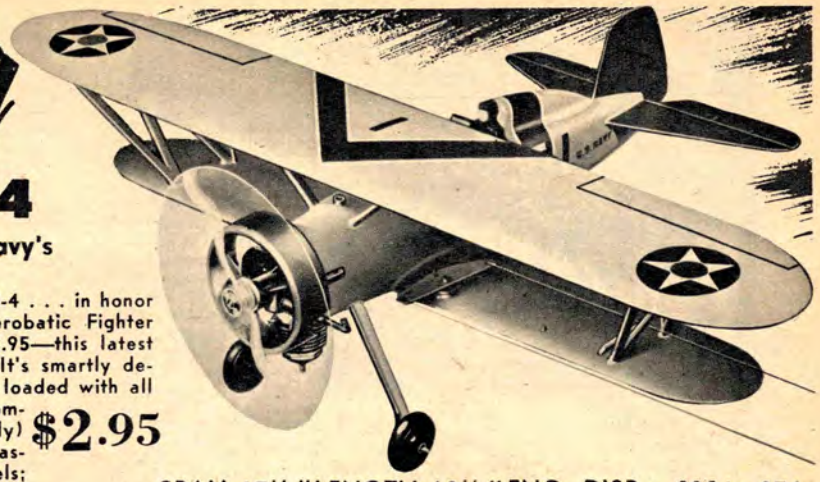

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LENGTH: 17" For .099 to .29 Eng. Our deluxe speedboat . . . a real thriller. Features precision finished parts . . . super prefabbed.

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Our sensational 2-in-1 kit. Contains two complete, realistic profile models. Both control-line flyers take .020 to .074 engines . . . both have 18" wingspans. Not one, but two complete models . . . make and fly both . . . for only $1.50.

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LENGTH: 14" For .020 to .074 Eng. A "beaut" of a speedboat. Prefabbed model is 100% complete—carved balsa hull, brass fittings.

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SPAN: 22" For .020 to .074 Eng. U-Control, authentic scale model. It's prefabbed . . . with a carved balsa fuselage, formed wing, etc.

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SPAN: 22" For .020 to .074 Eng. Scale control-line model. Prefabbed kit has formed balsa fuselage and wing, all metal parts, etc., etc.

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SPAN: 22" For .020 to .074 Eng. A U-Control scale replica of the real plane. Prefabbed model has metal cowl, carved fuselage, etc.

STINSON VOYAGER 1.95
SPAN: 22" For .020 to .074 Eng. Scale model. Carved balsa fuselage, formed wing, aluminum cowl, etc., in the prefabbed kit. U-Control.

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LENGTH: 9" For "½ A" Gas. Eng. Speeds over 40 m.p.h. Features direct wheel drive. Prefabbed kit has formed body, rubber wheels.

LITTLE BIPE $1.50
SPAN: 16" For .020 to .074 Eng. Carved balsa fuselage bi-plane . . . prefabbed for easy assembly. It's control-line. A real value!

LITTLE DEVIL $1.50
SPAN: 18" For .020 to .074 Eng. An economically priced U-Control model. Prefabbed parts include: formed balsa fuselage & wing, etc.

LITTLE ACE $1.95
SPAN: 18" For .049 to .099 Eng. For team racing or sport flying. Kit is 100% complete with formed fuselage & wing, metal cowl, etc.

BEL AIR $2.95
SPAN: 18" For .039 to .099 Eng. A control-line flyer that's loaded with flying thrills. Prefabbed model has all parts finished.

BEECHCRAFT "17" $2.95
SPAN: 16" For .045 to .099 Eng. U-Control, prefabbed model has carved balsa fuselage, formed balsa wings, metal cowl, etc., etc.

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SCIENTIFIC MODEL AIRPLANE CO., 113 A6 MONROE ST., NEWARK 5, N. J.

(*Continued from page 52*)

pen pal; was on RCACadet drill team that competed against U. S. cadets at Minneapolis; is now taking flight training. . . . AT3 Joseph E. Williams, USN, Moffett Field, sent along some nice snaps; one is of his AJ-1 Savage which boasts two .09 Cubs and a Jetex 350. When all the power is on Joe says it goes just like the real plane on which he works. . . . Attention, model race car fans: thanx to many helpful readers we can give you the name of the governing body for the sport—American Miniature Racing Car Association. All membership data 'n' dope from secretary Paul C. Kruse, 1629 Sinclair St., Ft. Wayne, Ind. Paul reports almost all cars are powered by Dooling .61 engines. Present world record is 149.50 mph set by Howard Fox of Bethlehem, Pa. . . . Nice note and photo from Newtown Model Aeronautical Association. Australia, that is. Arthur Gorrie is the Honorable Secretary at 604 Stanley St., South Brisbane, S.2. We suggest some U. S. club "adopt" the NMAA and set up correspondence to trade views and news. . . . New club in Quebec, Canada: Mackayville MC, R. O'Connor, pres. R. Johnstone is veep, can be reached at 1793 Holmes Ave.

Back to the Grind. Wants contact with U. S. modeler around 17 interested in A and Half-A free flight and team racers: Don Walker, 49, Kynaston Rd., Enfield, Middx., England. Wants Swedish correspondent about 18 or 19: Ralph Olson, 144 Roebuck Rd., RR 11, New Westminster, B. C., Canada; Ralph is 16 and headed for a career in RCAF as air crew. Hans V. Berchem has just finished a little Wasp-powered Zeek, is now in high school, has flown successfully the Papoose and Zephyr 5; wants pen pal in U. S. around 17; his address is Emmeringerstr. 49, Furstenfeldbruck, Germany.

Seventeen-year-old Swede wants contact in U. S.: Karl-Axel Bloom, Dr Tydows gata 26, Gothenburg, Sweden. Wants plans for German Donier Wal 2-engine flying

(*Continued on page 56*)

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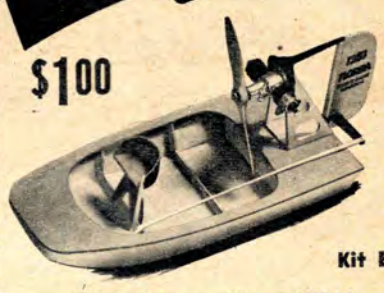

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(*Continued from page* 54)

boat: David Cameron, 38 Gwynn St., Ottawa, Ont. Dave also asks our opinion of building a free flight B-36 with two Half-A's mounted in inside nacelles. (Opinion: timber!) A four-footer, says he. Anybody have any experience along these lines?

Wants plans for F-82 Twin Mustang which appeared in 1951 "AT" Model Annual. Anybody through with their full-size drawings? After 'em is Joseph V. Callahan, 6013 S. Campbell Ave., Chicago 29, Ill.

Hey, gang! Just look who got married—Jack Dyer, famous modeling son of famous model leader June Dyer. Congrats, boy!

Terrific, Just Simply Terrific! That's the way Cleveland's model aviation set described the 2nd annual air meet in the public hall. It was an indoor flying contest; hall is 120 feet long, 90 feet high. Sponsors were Cleveland Coca-Cola Bottling Co., the Cleveland Press and the City Recreation Division. With cooperation from local aviation groups whose members acted as timers and judges it was an outstanding example of a well run meet.

Statistics: more than 400 contestants (!), more than 1,100 models entered (!!), more than 15,000 spectators (!!!). All this from Irma (Mrs. "Red") Hilligas.

This 'n' That. Add to your club listings: McMinnville, Ore., Sky Wolves, c/o Tommy's Bike & Hobby Shop; Medford, Ore., Prop Nuts, 23 North Fir St.; Tacoma, Wash., Airmuddlers, 915 South Tacoma Way. . . . Philip Desserchant, Flying Thunderbirds, 5 Summer St., Caribou, Maine, asks other club leaders for names of good decal houses so he can get the club insignia made up. The F. T.'s are sponsored by the local V.F.W. Also he wants dope on good 16mm. films. Can anybody help? . . . Harbard Hedgehoppers of Toronto, Ont., maintain a club plan and "AT" back-copy library. Sounds like a fine project. J. H. Humphreys, 256 Bathhurst St., has all the dope.

(*Continued on page* 58)

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Our particular case isn't quite that bad. But many of the new ideas we've put on the market have been so unbelievable that it takes a little while for them to sink in.

We've given you Nylon wheel collars, bell cranks, snap-on spinners, hinges, all of which were a little ahead of their time. It took a little while, but now they are accepted as the standard of the model builder.

Now our engineering department (you, the model builder) has come up with our latest developments. Yes, the model builder has been using the four new items which will shortly hit the market.

First, a pen bladder pressure tank. All we have done is made pen bladders eight inches long, added a ball check valve and a little common sense.

Second, to go with the present day needs of pressure fuel systems, a fuel line tubing much more flexible, fuel-resistant than any tubing you have ever used.

Third, two rubber bulb type fuel tank fillers. Here you have been buying hydrometers, syringes and what-not, and converting them for your use. All we've done is add a screw type top and a length of ⅛" tubing. This item should put all mechanical pumps in the scrap heap, including our own. We'll still produce our pump for those screwballs that want to use it.

Fourth. Last but not least, many model builders have been using ordinary rubber balloons with great success. We've gone to a little expense and research and have come up with the BELLOWS TANK. I'm not going to say any more about it. Let your imagination go to work. I'll bet you will come up with the same answer we have.

Your dealer does not have these items yet. So please do not bother him too much. We will get them out as soon as possible.

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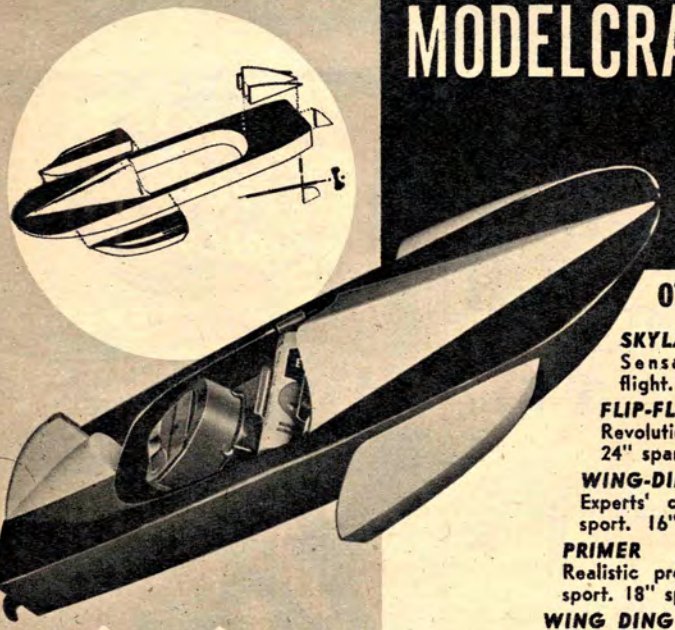

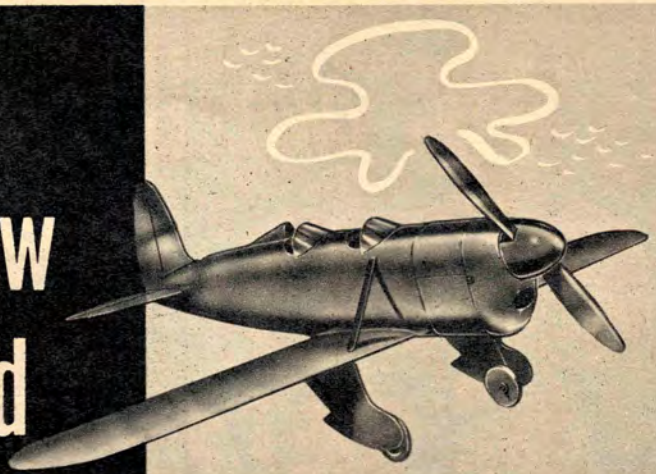

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Goodyear prototype for half-A team racing. 17½" span. **$2.50**

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(Continued from page 56)

. . . One club that's really looking forward to the Nats is the Sky Masters of Mt. Wolf, Pa. C. M. Ehrhart, 21 S. Fifth St., says anyone in York County is invited to contact him re membership. . . .

Did we mention the results of the 12th team racing contest in the California circuit? Don't think so. The competition was sponsored by the FAST Club, the Thunderbugs of Santa Ana and the Airliners of San Diego. High point winners: Don Chin, Chula Vista, 1138 points; Mrs. Violet Hoyt, San Diego, 1049; hubby M. G. Hoyt, 991; Granger Williams, Huntington Park, 978; Jerry Gaston, 901. Hurray for that gal! . . . East Donegal Pa., High School boasts a model club. Nelson Hess, Box 154, Rheems, Pa., is secretary. . . . Art Pawloski tells us about the Dixon school club. Address is Detroit, 28. He's the president, incidentally. Thirty members meet every Wednesday. Lots of activity—a city-wide meet, indoor contest and two outdoor meets during the last semester. There's a special showcase in which models the club members build are displayed, plus all awards they win in contest flying. Arthur lives at 8684 Plainview.

And still another school club: Kennebec, S. D., High School Wing-Dingers. George Milnar is president; E. J. Charboneau, shop instructor, is supervisor. Fifteen members who fly, mostly Half-A, in the school gym. Club started this past school year with just 3 enthusiasts, now boasts 15. Dues of 10¢ per week per man go toward prizes for the spring contest. . . . "We have about 12 youngsters who've progressed to the point where highly exciting team combat is enjoyed (!!!). Two-man teams engage in combat against another two-man team, each team using its own color for streamers. The teams have evolved tactics so that team work is essential for the success of one's team."

—THE DOPESTER

ADVANCE SHOWING: Keep your eyes open for the July issue of Air Trails! A few of the features . . . "Turbine Jets for Models" . . . Bonzo control line flying scale by Cal Smith . . . "The Brave Baroness—First Licensed Lady Bird" . . . Radio controlled Porsche model sports car . . . Goodyear-Continental midget racer roundup.

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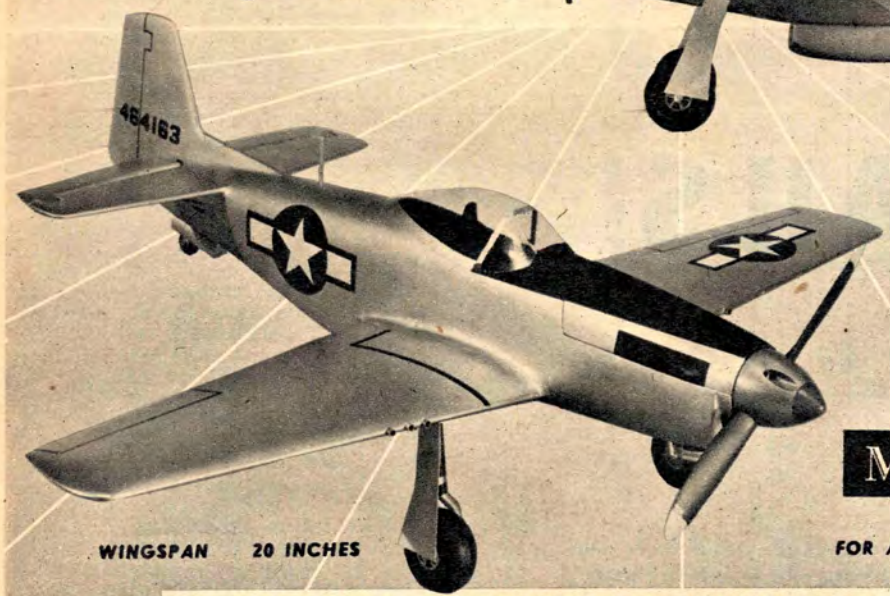

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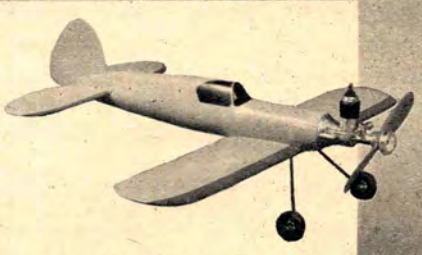

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AT653

The Model Biz

Inside dope from the model industry; kits, engines & accessories

■ It's official: correct moniker for new McCoy Diesel is just that; earlier designation as "Duro-Glo" diesel has been dropped. . . . Berkeley production lines going full blast: new Super Cloud Wakefield, the $2.95 and $3.50 helicopters and three Sil-O-Jets were scheduled for country-wide distribution by the time you read this. Latter include Panther, Scorpion and Starfire as slab-type flying scalers powered by Jetex. With engine, scheduled price for set was $1.95. This month the much-heralded sport car kits by Boikley Bill were to hit the market.

Hitting the ball: various committees of the Model Aeronautics Section of the Model Industry Association as appointed by Section Chairman Jack Besser. These groups are: *International Competition* (Wakefield and F.A.I. F/F)—Robert Reder, chairman, Matt Sullivan, Joe Hardie, John McRoskey; *Academy of Model Aeronautics Liaison*—Leon Shulman, chairman, Ed Manulkin, Leroy Cox, Al Lewis, Jerry Brofman; *Local and International Plymouth Meets Liaison*—Prem Gary, chairman, Ray Carlson, Frank Brophy, Mike Schlesinger, Earl Smith; *Publicity*—Al Lewis, chairman, Ed Manulkin, Bill Winter, Walter Holze, John Brodbeck, Frank Butler; *National Model Airplane Championships*—Matt Sullivan, chairman, Bill Effinger, Harold deBolt, Walter Holze, John Brodbeck, Leon Shulman; *School Program*—Prem Gary, chairman, and Al Gasdia, Bill Winter, Charles Miller, Bill Effinger, Carl Goldberg; *Flying Fields*—John McRoskey, chairman, Jerry Brofman, Matt Sullivan, Keith Storey, Christine Zaic.

Here's price announcement on K&B's new Green Head Torpedo .23—$13.95; idea is you can fly one free flight model in two classes since K&B's .23 is interchangeable with its .19. . . . Three new Top-Flite Jigtime models out: Sabre Jet, MiG 15 and F7U Cutlass, 25¢ each; in field tests comparable jobs were built held together by (1) cement, (2) Scotch Tape and (3) rubber bands. All flew equally well! . . . Reports Harold deBolt of Dmeco: "We have had many requests for info about elevator controls and how to install them on our Live Wire Senior. We worked out a simple method though I hardly think the average R/C man is ready for this sort of thing so we do not include it as yet in our kit. (*Continued on page* 64)

The Cameron Clan (from lt.): Don, "Butch" (Edward), Poppa Fred and Bob at company's test track. New 2-speed Cameron engine is scheduled to make an early appearance.

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for AIRPLANE and AUTOMOBILE

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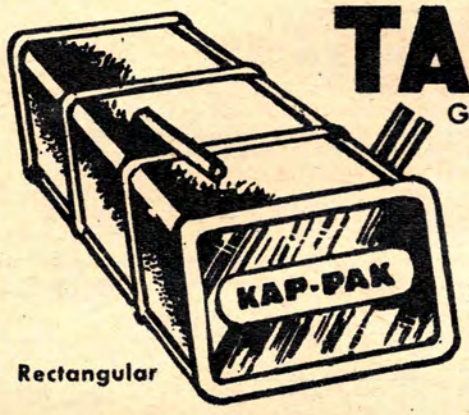
Gas Model



Rectangular

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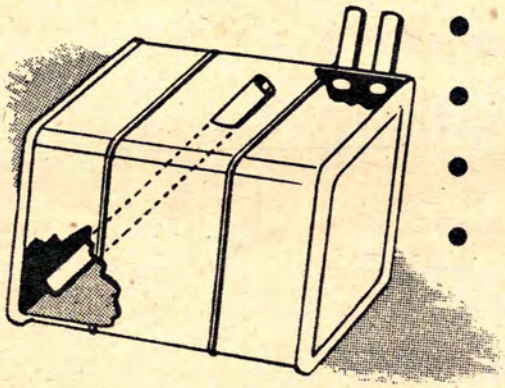
Check these Construction Features!



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39¢ to 69¢

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18¾" wingspan
.039 to .099 engines

This great new miniature controline will absolutely stunt better than any model in its class. COMPLETE with highlift stunt wing with stationary flaps, PLUS ALL PLASTIC accessories including SPINNER, CANOPY, AND PILOT.

AIR RACER

A real racer with a .099 or .14 engine Air Racer is the most beautiful team and spot racer ever created. Fully carved two piece fuselage and one piece wing completely pre-fab ready to assemble PLUS ALL PLASTIC ACCESSORIES including SPINNER AND PILOT. What a buy!

18" wingspan
.074 to .199 engines

ONLY $3.39

SLICK TRICK

17¾" wingspan
.039 to .099 engines

A real beauty light enough for an .039 yet strong enough for an .099. The Slick Trick will amaze all with its breathtaking flights, beauty, and ease of assembly. A masterpiece in kit engineering is this completely pre-fabricated model. Contains ALL PLASTIC ACCESSORIES including SPINNER, PILOT, AND CANOPY at the unbelievable price of only..... $1.95

Put a .099 or a .14 engine in this beauty and you'll have one of the snappiest stunters in the small plane field. Completely Pre-Fab with the famous "Hollow carved" WONDER WING, an amazing value.

SUPER KNOCKOUT

ONLY $3.50 24" wingspan
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and — for all your other models... ONLY 25c for both

they're made for each other

molded fuel proof plastic...

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KNOCKOUT

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Southern Scene

At long last we hear from the "Deep South". Things are humming down there!

■ Lotta interest in meets this year! Alexander City, Ala., opened on May 3 and beginning May 23-24 in Albany, Ga., every week-end through July has a sanctioned or pending contest. Columbia, S. C., May 31st; Charleston, S. C., June 7; Nashville, Tenn., June 13-14; Southeasterns in Atlanta, June 20-21; Birmingham, Ala., June 27-28; Spartanburg, S. C., July 12, with Chattanooga, Tenn., and Greenville, S. C., not yet scheduled. Of course, in late July all roads lead to Philadelphia for the Nats. No word from Mississippi or Florida—let's hear from you-all!

Jack Scharpf, Greenville, S. C. (formerly of Columbia, S. C.) the new AMA 5th District Contest Co-Ordinator. Send sanction requests through him at Greenville, S. C., c/o Southern Bell Telephone Company. Jack will soon have a booklet ready, "How to Judge Stunt," embracing "do's and don'ts" as related to the new 1953 Precision Acrobatic pattern.

In an effort to improve judging in this event, each CD will soon get a set of examination papers for potential judges. Papers returned, graded, and competent men certified to judge stunt in District 5. Herbert and Alfred Davis, Birmingham, Ala.'s contribution to model champs, are making ready for another campaign. We hear they can expect tougher competition this year—but so can their competitors!

The Arthur Godfrey Perpetual Trophy, four feet tall, will be awarded this year for top performance in free flight and R/C during '52. This is one of the high points of the Greater Southeastern in Atlanta. Contenders urged to send in their records of '52 in AMA sanctioned meets to the writer in advance of the meet, June 20-21.

Atlanta Congress Model Airplane Clubs finished up its series of cold-weather meets in different areas of Atlanta. Keeps the flyers on the ball and they get trophies too! R. S. Davis is the President of ACMAC.

South Carolina tops the District in sanctioned meets for '53. Four and maybe five are scheduled.

Papa Ed and son Jerry, speed combination formerly from Jax., Fla., now in Tuscaloosa, Ala., unless their plans have been changed. Get Alabama waked up, Ed!

Revival of model meets expected in Chattanooga, Tenn. W. L. Arey of Exchange and Ken Metcalf of TVA the guiding lights.

Florida promises to hold some "unrestricted" meets this year so District fellows can attend in St. Pete, Daytona, and Jax. By the by, what's happened to the grand meets the Navy used to hold in Pensacola? Lt. (maybe by now he's an Admiral) "Dub" Yarbrough, former CD and speed champ, would be the right guy to organize it.

Stunters in the junior division warned to keep an eye on Walter Pyron of Decatur, Ga. He's plenty good and now teams up with Bob Elliott and Harris Grimes

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18" wingspan $2.50

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three great models

These three great models are the standard of miniature controline sport and stunt models. All completely prefabricated, beautiful designs that will give you the utmost enjoyment from your small engines all suitable for .045 to .099 engines.

36" wingspan
22¾" length for
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the NEW CHAMPION

This great new CHAMPION with additional rudder area is perfect for contest or sport flying. Its rapid pre-fab construction, and excellent flying ability will prove an extreme pleasure for all free flight fans. Sturdy and lightweight, it has proved an excellent competitive PAA LOAD model.

ONLY $2.50

SHADOW

32" wingspan .039 to .074 engines

The most beautiful and most flyable miniature free flight model ever designed. The Shadow will thrill all real free flighters with its smooth flights and clean appearance. It has also established its mark as a fine competition model in duration and PAA LOAD events. Completely pre-fab.

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TOW-LINER

These two beautiful TOWLINE and JETEX gliders will amaze expert and novice with their ease of construction, and great flying ability. Their razor-cut sheets just fall together to make the sweetest looking, swellest flying models you have ever seen. Those spring and summer thermals are calling fellows—get these models today. Both models feature high lift easy built "Ritz" wing. Exclusive "Circlimatic" fuselage construction. All parts razor-cut to shape—ready to assemble. 24" wingspans.

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flying Berkeley's P-40 Warhawks.

If you are going to the Nashville meet June 13-14, and want a place to sleep overnight, better write Carl V. Miller, 427 Deaderick St., Nashville, Tenn. Hotels usually are full!

In spite of rule changes, District 5 will not combine C and D speed this year. Too many flyers still have C ships, and it doesn't make sense to combine C and D.

Winners in the Southeastern, June 20-21, will be getting U. S. Savings Bonds instead of trophies. Tough break for genial Jack Russell of Des Moines, Iowa, but this is an experiment, Jack! High point men will get trophies too!

And the man who will donate these first-place $50 U.S. Savings Bonds—all 32 of them—is none other than Gentleman Jim Walker of Junior Aircraft, Portland, Ore. Southeastern officials and modelers are high in their praise of Jim's big-hearted cooperation.

Tommy Davis of surburban Buckhead (Atlanta) moves this year into the Senior division, leaving Junior speed wide open. He now holds the Arthur Godfrey Perpetual for top performance in '51 and has a great record. In three years has won 67 trophies in speed.

New developments at Lockheed Aircraft Corporation, Marietta, Ga. Senior and Juniors clubs—open six nights a week—workshop and older flyers to help the little 'uns. Bill Milligan is the Pres.

All F/F and R/C in the SE this year under direction of Ernie Knichel, a newcomer backed by such men as George Perryman and Jim Wade.

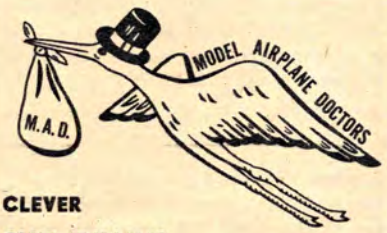
George making request now for the International Eliminations in Atlanta, backed by all officials of District 5. Those interested, write him c/o Lockheed at Marietta, Ga.

Lamar Parker, newly elected member of the Contest Board in District 5, asking why AMA can't leave the C speed records open for any who care to try to break them. The AMA vote was to eliminate C, but no reason we can see to discard speed records. Likely the vote two years hence will put C back into the ranks on its own. Times change and then change back, yes?

To District 5 Flyers and Leaders!

If the West can have a "Roundup", why can't we have a "Southern Scene"? Air Trails will co-operate—will you? Rush me your news, your opinions and your progress. It's up to you! We'll have news about YOU, if you'll send it to . . .

R. H. ELLIOTT, BOX 5078, ATLANTA 2, GA.



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THE *Super Engine . . .*

4¼ lb. Thrust
16 oz. Weight
21 in. Long
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JET PROPULSION! The greatest development in the field of aviation. Be modern, gain enjoyment plus knowledge with the world's finest miniature engine!

SUPER POWERED! More than 4¼ lbs. guaranteed thrust . . . the equivalent of 3 HP at 190 mph with 70% propeller efficiency . . . 1948 AMA speed record of 179.03 mph.

EASIEST STARTING! Most practical and reliable engine ever built. No propellers to break. No ignition system to burden your model. No bearings to wear out. No expensive, special fuels to buy or mix.

MOST ECONOMICAL! Will not wear out. Constant high resale value. Savings on propellers and fuel alone pay the difference in cost between Dyna-Jet and cheaper engines.

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Model Biz

(*Continued from page 60*)

However, I have made up some complete working drawings to full scale showing just how it can be done. For those who may want the drawings we can supply copies at a cost of 75c each postpaid (deBolt Model Engineering Co., Box 73, Williamsville, N. Y.)."

Herkimer Tool & Model Works has introduced new glow plug and accessories packages; you'll spot them at your dealer's. . . . New site for the Wen-Mac Corp. located on Stoner Avenue and Olympic Blvd. in West Los Angeles. General offices and plant will be consolidated in one location rather than in two as previously . . . Francisco Laboratories of L.A. has acquired sole rights to use the highly specialized processes of the Scientific Oil Engineering Co. in the production of racing fuels. Wallace Francisco announces, "It is now being added to the Francisco TOPSOL line of products which include TOPSOL HY-GLOW (model engine fuel), TOPSOL Crankcase Oil and TOPSOL Hypo-Nitrate." . . . Change of address for Henry Engineering Co.: 3625 W. Pacific Ave., Burbank, Calif. Mail still should go to Box 229, Burbank.

C.A.P.

(*Continued from page 20*)

Lackland Air Force Base—All-girl encampment; all wings. Lowry Air Force Base—Colorado and Wyoming Wing. Mather Air Force Base—California Wing. Nellis Air Force Base—Nevada Wing. Scott Air Force Base—Iowa and Missouri Wings. Vance Air Force Base—Arkansas Wing. Wichita Municipal Airport—Kansas and Nebraska Wings.

Air University: Maxwell Air Force Base—Alabama Wing.

Continental Air Command: Atterbury Air Force Base—Indiana Wing.

Military Air Transport Service: Andrews Air Force Base—Maryland and National Capital Wings. McGuire Air Force Base—New Jersey Wing. Great Falls Air Force Base—Montana and North Dakota Wings. Hickam

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Tactical Air Command: Donaldson Air Force Base—South Carolina Wing. Langley Air Force Base—Virginia and West Virginia Wings. Sewart Air Force Base—Tennessee Wing. Shaw Air Force Base—North Carolina Wing.

Pat & "AT" off to G.B.

We want you to meet Pat Fulford. A noted columnist for writers' magazines and agent for many top cartoonists, she's shown selecting Air Trails cartoons which will be part of an exhibition of American cartoonists to be held in London during the Coronation. Our thanks to British Overseas Airways (BOAC) for flying it all over and to Pat for the honor.

(Photo by Marie-Pierre Salem.)

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F-11 F-51 MUSTANG
F-12 SPITFIRE
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F-14—SABRE JET F86

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CONTEST CALENDAR

List meets here! Advise Air Trails 90 days in advance to do the most good for your meet. If any area restrictions on entries, be sure to state. Address of contact man in same city as site of meet unless otherwise specified. Where info on events is furnished these are abbreviated as follows: indoor rubber powered—IR; outdoor rubber powered—OR; outdoor hand launched gliders—OHLG; indoor glider—IG; towline gliders—TL; free flight gas—FF; control line speed—SP; control line scale—CLSC; control line stunt—ST; team racing—TR; combat—COM; radio control—RC; rise-off-water free flight—ROW; carrier models—CAR; free flight scale—FFSC; non-flying exhibition scale—NFSC; jet speed—J; controline endurance—CLEND; Wakefield—WAK; PAA-Load—PAA.

May 9—Bellevue, Pa. North Boro's Rotary Club model air show. M. J. Thomas, 246 Morrison Dr., Pittsburgh 16.

May 10—Medford, Ore. Prop Nuts meet. R. L. Ottoman, Rt. 2, Box 358.

May 10—Kansas City, Mo.—Mo-Hawks A/2 F/F. S. E. Smith, E. 32nd Terr.

May 16-17—Los Angeles, Third Pacific Coast Championships. R. E. Moncrieff, 2108 Santa Fe Ave., Torrance.

May 17—Denver, Colo. Third Ringmasters meet. ST; SP; CLSC; COM; J. Hobby Center, 7014 E. Colfax.

May 17—Lakeworth, Fla.: Palm Beach Cloud Dusters. FF: F. T. Kerr, Jr., 3628 S. Dixie Hwy, West Palm Beach.

May 17—Dallas, Tex. Cliff MC meet. J. B. Hargis, 1102 W. Saner Ave.

May 17—Williamsville, N. Y. Flying Bison's RC. Donald Hobel, 70 Bigelow Rd., Buffalo 25.

May 23-24—Wichita, Kan. WAK eliminations. W. R. Weaver, 611 Lightner Dr.

May 24—Bristol, Pa. Aeromodelees Flying Circus: ST; COM; TR; CLSC; OHLG. Clarence Wells, 1300 Dixon Ave., Croydon.

May 30—Galesburg, Ill. G.M.A.C. TR meet. Ken Freese, 224 Silver St.

May 30-31—Boston, Mass. 7th Annual Plymouth meet.

May 30-31—Marysville, Calif. 4th Exchange Club meet. Twin Cities MAC, Box 91.

May 30-31—Scottsbluff, Neb. Peanut Pilots meet. C. H. Adkins, 2017 Broadway.

May 30-31—Marysville, Calif. 4th Exchange Club meet. L. C. Armstrong, 229 R St., Yuba City.

May 31—Easton, Pa. FF; COM; J; SP; TR. Joe Groman, RD #2.

May 31—Clarinda, Ohio. Model meet as part of City Centennial Celebration at new Municipal Airport. C. C. Anderson, Clarinda.

June-Aug.—CAP Cadet Encampments at 44 USAF bases.

June 7—Cicero, N. Y. 9th N.Y. Statewide Schools meet; OHLG; TL; OR; FF. H. C. Copeland, 104 Lincoln Ave., Syracuse 4.

June 7—Hicksville, L. I. Ninth Skyscraper meet. Robert Walters, 48-56 44th St., Woodside, N. Y.

June 7—Albuquerque, N. M. S.A.K.M.A.C. record trials. J. B. Cahill, 205 Bryn Mawr Dr., S. E.

June 7—Wilmington, Del. Class AA Exchange Club Meet. W. Lewis Knowles, Jr., 515 Shipley St.

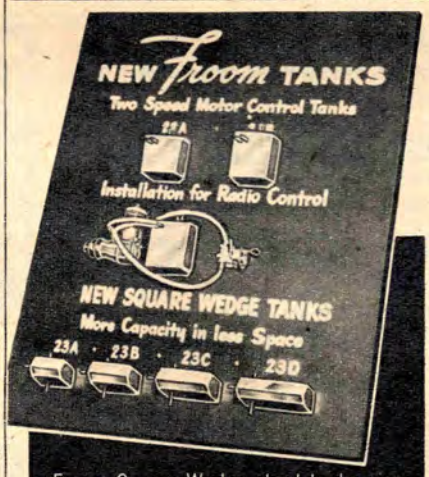
June 14—Rock Island, Ill. R.I.M.A.C. Air Derby; 25-mi. endurance contest. Larry Dickinson, 1536-42nd St.

June 14—San Dimas, Cal. Hi Tailers hydro meet. Russ Johnson, 344 Duane Ave., San Gabriel.

June 14—Modesto, Cal. Flying Circus Meet.

June 14—Nashville, Tenn. CAP meet; OR; WAK; TL; OHLG; FF; Rubber Scale; RC; SP; J; ST; CLSC; TR. C. V. Miller, 427 Deaderick St.

June 14—Wabash, Ind. Exchange Club meet; ST; RC; FF. N. R. Lavengood, Bx 183.



Froom Square-Wedge stunt tanks give real efficiency for peak performance. Designed to fit a large number of kits. Square-Wedge tanks have greater fuel capacity yet occupy less space. You'll find them easier to mount than the regular wedge.

You can depend on a Froom tank for service and long life. Froom tanks are precision built of noncorrosive tin plate, inside soldered and guaranteed against leakage. For further protection they are boiled clean and pressure tested.

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More than 100,000 sold last year! All-metal brass tube, plated plunger, metal ball. Formerly $1.00.

Regular Pint or ½ Pint . . . 65¢
with Filter Pint or ½ Pint . . . 69¢
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Precision made of highest grade materials.

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2. Baby Spitfire 39
3. Wasp, K & B, McCoy 39
4. Universal 49
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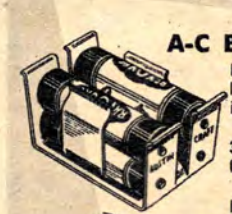
A-C BATTERY BOXES
Handy! Positive contact holds batteries secure even in crack up. No soldering.



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3 volts . . . 60¢
6 volts . . . 75¢
2 Pen-Cell, Med. 1"
Large 1¼" each . . . 40¢

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Official Scale Models Win the Acclaim of Experts Everywhere for Authentic Detail

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with official insignia in Army olive drab, Navy blue, and Civilian red.

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You've been reading about these exciting helicopters for a long time — now you can own exact replicas, detail for detail. So real looking, you think they're about to take off. These models are precision molded of sturdy polystyrene plastic, and are handsomely gift-packaged with a dramatic color illustration, suitable for framing, on the box cover. Each easy-to-assemble kit contains a clear plastic display stand, instruction sheet, and a folder describing the fascinating history of the helicopter. These authentic models are a prize for any collection—get yours today! ORDER FROM YOUR DEALER, or write direct to us. Enclose check or M.O. plus 25c for postage and handling—no C.O.D.'s please. Specify model and color desired.

Helicopters for Industry Inc., 111 Cathedral Avenue, Hempstead, N. Y.

June 13-14—Saugas Field, Boston, Mass. N.E. Wakefield eliminations. Ed Dolby, 25 Exchange St., Rockland.

June 21—Flint, Mich. Exchange meet. R. J. Dear, 228 E. 1st St.

June 20-21—Los Angeles. 3rd Pacific Coast FF championships. R. E. Montcrieff, 2108 Santa Fe Ave., Torrance.

June 21—Greenfield, Mass. Kiwanis Meet. B. H. Williams, 27 Southampton Rd., Westfield.

June 21—Johnsville, Pa. Phila. Plymouth Dealers' meet.

June 27-28—Beaumont, Texas. Exchange Club meet (AAA). ORU; FF; SP; CLSC; ST; COM; J; RC. Don Still, 790 Liberty Ave.

June 28—Cleveland, Ohio. Lake Erie G.M.C. FFSC. J. W. Grega, 10422 Gay Ave.

June 28—Williamsville, N. Y. Flying Bisons meet. FF; OR; TL; DHLG. Donald Hobel, 70 Bigelow Rd., Buffalo 27.

June 28—Winston-Salem, N. C. Plymouth meet. FF; RC. Ed Aldridge, 853 Watson Ave.

June 28—Oil City, Pa. Plymouth-Exchange meet. Raymond Burns, 126 Nesbit St., Franklin.

June 28—Hicksville, L.I., N.Y. Aeronuts L.I. Championships. FF; PAA; OR; TL. S. S. November, 593 Lenox Rd., Brooklyn.

July 27-Aug. 2—Lakehurst, N. J. & Willow Grove, Pa. 22nd National Championship Contest. A.M.A., 1025 Conn. Ave., N.W., Wash. 6, D.C.

Aug. 1-3—Cranfield, England. Lord Wakefield, FNA Cup and F.A.I. FF competitions.

Aug. 19 to 24—Detroit, Mich. International Plymouth Modelplane Contest. See your local Plymouth dealer.

Aug. 30—Brooklyn, N. Y.—Mirror Model Flying Fair at Floyd Bennett N.A.S. Daily Mirror, East 45th St., N.Y.C.

(See also contest mentions in Dope Can, R/C, Southern Scene, and Western Roundup columns.)

Ehling on F/F Design

(*Continued from page 41*)

under similar weather conditions proved that No. 1 and No. 27 had dissimilar flight patterns—as any dub designer could guess—but dig this, gentlemen: both designs turned in creditable and comparable performances! Can you continue to take it? Other combinations (including many not in strict accordance with "theories" widely publicized during this "Era of the Pylon") *not only flew, but flew well and no trick adjustments were necessary!*

Only two flights adjustments—both completely conventional—were utilized. A tilted stabilizer controlled "turn" in the glide and offset thrust opened up or tightened the power turn.

(*Continued on page 70*)

STUNT and COMBAT THRILLS with the famous FOKKER D-VII

KIT C-8

Actual photograph of model built from kit

Span 32½". Length 27". For Class A, B and C engines.

$5.95

- One of the most spectacular fighters in the skies during World War I!
- Full stunt scale model—does dog fights, balloon busting, inverted flight, entire AMA flight pattern! • Easy to build—completely prefabbed! All parts die cut or shaped. Formed landing gear. Optional wing flaps.
- Hardware kit. Authentic decal insignia. • Detailed, step-by-step drawings, instructions, etc. • *Build* it! *Fly* it for unbeatable scale combat thrills! See your dealer *now!*

SEE THESE OTHER STERLING MODELS!

NAME	KIT	PRICE
Monocoupe	C-1	$4.95
Howard Pete	C-2	5.95
Mr. Mulligan	C-3	4.95
Waco	C-4	5.95
Polish Fighter	C-5	5.95
SE 5	C-6	5.95
Ryan S-T	C-7	5.95
Ring Master	S-1	2.95
F-51 Mustang	S-2	2.95
Yak-9	S-3	2.95
Space Master Jr.	S-4	2.25
Maverick	D-1	1.00
Hawk		1.50

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1530-34 N. Hancock St. · Philadelphia 22, Pa.

R/C NEWS

Simultaneous Operation on BOTH Citizens Bands

By Vern C. MacNabb

The question is frequently asked, "Will CITIZEN-SHIP 465 and 27.255 interfere with each other?"

Neither radio frequency can interfere with the other. The high frequency cannot possibly be received on the lower 27.255, and the nearest harmonic of 27.255 to 465 is the 17th, which is negligible in a properly designed transmitter such as the CITIZEN-SHIP 27 Type LC.

Sometimes the quench frequencies of two receivers will be the same and the quench signal of one will be picked up by the other when RECEIVERS are side by side. This is the only way interference can be obtained between these two bands.

If this should occur a slight readjustment of the quench coil tuning will eliminate this interaction.

Therefore we have the opportunity of multiple control with CITIZEN-SHIP 465 and 27.255, one frequency for rudder, the other on elevators, plus other combinations to give motor speed, brakes on wheels, etc., depending on the ingenuity of the modeler.

NEW . . . CITIZEN-SHIP "27" LR, RECEIVER, is a hard tube (3V4) receiver giving a 5 to 1 plate current change assuring dependable operation with a Sigma 4F adjustable relay. Has indestructible fiber glass base 2½ x 1¾"; height of unit 2¼" and weighs only 4 ounces; price $24.95

NEW . . . CITIZEN-SHIP "27" LC hand held transmitter (shown at left) for use on new "examination free" 27.255 kc frequency is completely self contained. Using a 3-section plug in antenna 48 inches long and two 3V4 tubes it gives extra high radio output. Factory tuned and adjusted for optimum performance. Weighs just 4 lbs. complete with batteries; dimensions 3" x 4" x 9". With tubes and crystal, price less battery..... $39.75

RECEIVER model CR for 465 mc Citizens band; ready to "fly out of box"..... $29.95

TRANSMITTER model CC for 465 mc band; price less batteries..... $39.75

Citizen-Ship SN escapement	$ 9.95
Good Bros. 4 position escapement	13.50
Citizen-Ship Test Meter	19.95
Bell Crank and Rudder Horn	.75

VERNON C. MacNABB CO.

909 Westfield Blvd., Indianapolis 20, Ind.

SHOWCASE

TRY YOUR FAVORITE HOBBY SHOP FOR ITEMS PRESENTED HERE. ALL DATA CHECKED CAREFULLY, BUT IS SUBJECT TO CHANGE

JASCO C/L'er

Meet the "Jasco Speedee" for all small Half-A engines. It's a team racer with 18 in. wingspan, 15.5 in. fuselage. The balsa parts are die-cut and shaped. All necessary hardware and decals included. Builds in approx. three evenings; sells for $1.85. Formed wire parts. For smaller scale T.R. flying.

This completely finished Cabin Cruiser is the "Cruisette" by International Models. It's made of fine woods, handsomely painted. Sells for $20 which includes motor 'n' all—everything but batteries. Length, 18.5 in.; beam, 5.5 in.; 40 nickel plated fixtures installed. Design is famous "flying bridge" type.

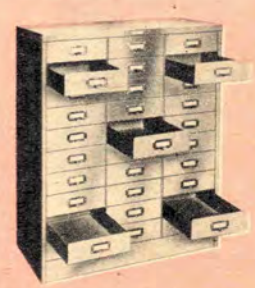
COMPLETE

WANNA PILOT?

"How to Become an Airline Pilot" by Capt. R. F. Adickes, TWA, while not a big book nor a long book, will represent a buck well spent to the serious minded young fellow who wants to make air transportation his chosen field. It's published by Aviation Consultants, a group of pilots from leading airlines.

The deluxe gift for the hobby hubby (hey, Dad, show this to Mom afore Father's Day): 30-drawer steel storage cabinet. For small machines and tools; $35.95 FOB from N. Y. Steel Co., 35 Maiden Lane, NYC 38. Overall dimensions in inches: 36½ x 29⅞ x 11¾. Drawers: 3 x 9¼ x 11¾ inches. Handy.

FINE FOR DAD'S DAY



TWIN CANS

Two new Aero Gloss offerings from Pactra Chemical Company: Aero Gloss Rubbing compound and Aero Gloss Hard Gloss Wax. Both names are self-explanatory. Each comes in shoe polish-like can, for 40c, very handy for slipping in the pocket or tool kit for that last-minute touch-up. Slick idea.

RADIO CONTROL

R.C.H. RECEIVER for 27 M.C.
Highest Grade Electrical Parts
Assemble it yourself. ● No. 127 —It's Interesting— KIT **$13.75**
All Parts included, ready to Assemble

R. C. H. #227 Crystal Controlled 27 M.C. Transmitter. No license required

KIT, $24.75 Includes all Parts (except Tube & Batteries). Ready to Assemble; Antenna Key; 0-50 Meter.

INSTRUCTION MANUAL
with complete circuits, diagrams & directions for flying model airplanes by Radio Control. *Price Postpaid.* Send for Free Catalogue. **50 CTS.**

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12 beautiful power boat construction kits —21" to 33½" length. $2.95 to $9.75. Write for free literature on boats, motors, fittings. At all hobby stores. Chris-Craft, Owens, Harbor, Vinyard, Colonial. Large boat construction from factory plans. U. S. A. and Armed Services only.

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F4U-5 "CORSAIR"	F-84E "THUNDERJET"
F8F-2 "BEARCAT"	F-94 "STARFIRE" JET
B-26 "MARAUDER"	JAP "ZERO" FIGHTER
BRITISH "SPITFIRE"	FOCKE-WULF 190
F4F "WILDCAT"	P-51B "MUSTANG"
FIESELER "STORCH"	SBD "DAUNTLESS"
TBF "AVENGER"	P-47B "THUNDERJET"

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aircraft plan company
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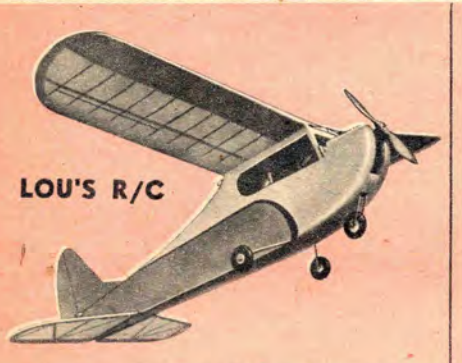
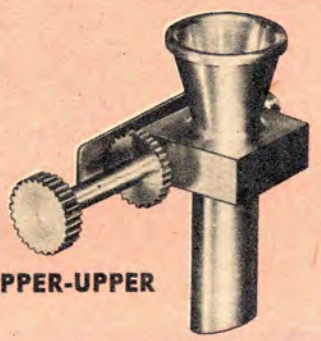


LOU'S R/C

Long awaited has been Lou Andrews' Trixter Beam R/C model which is kitted by the Paul K. Guillow concern. Price is $6.95; span is 50½", length, 35"; total area, 372 sq. in. Takes engines from .09 to .14; has massive fuselage for any R/C gear and heavy paws. Flying wt. 35-50 oz., per equipment.



PEPPER-UPPER

Up to 50% more power is promised by Engine Aid Products with its venturi carburetor which weighs ¼ oz., gives 2 to 3 times more fuel suction. Price is $2.50; it offers constant power during violent, stunt maneuvers. Available for Fox .29 and .35; Veco .29 and .31; K&B Torp .29 engines. Tested fine!

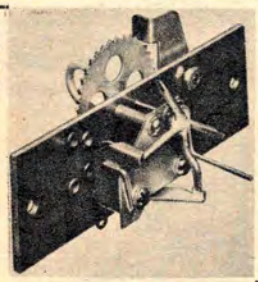
Irwin G. Ohlsson, well-known to modelers in engine, fuel and contest field, now offers Ohlsson Gold Seal Half-A Glo Fuel and Gold Seal "200" for engines above the Half-A class. Each sells for 45c the half pint, 85c a pint. "New and advanced additives are included," reports IGO, former champion flyer.

Fly Safely

- IF YOU FLY CONTROL LINE MODELS, don't stand within 500 feet of any power, phone or light lines!
- IF YOU FLY FREE FLIGHT MODELS, don't permit autos or spectators within 500 feet of your take-off site!

MODEL AVIATION SAFETY COUNCIL

TOPS IN RADIO CONTROL



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Wt. 0.8 oz.—⅛ Rubber Drive. 3 V. Coil—1" x 3" Mtg. Plate **$14.95**

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It was a big occasion when ma and pa headed for town in this speedy vehicle...for shopping or church or an old-fashioned "hoe-down." You'll want this authentic Frontier model, made of pine and balsa with molded plastic wheels, for your very own. **$1.25**

SEE OUR COMPLETE LINE OF WESTERN KITS AT YOUR FAVORITE DEALER

(*Continued from page 67*)

The interchangeable pylon proved that it contributes materially to the flight pattern. With power on, low wing positions produced left turn, higher pylons gave right turn.

Part II of "It Don't Mean a Thing . . ." will present the proper adjusting and flying techniques which will start you off on the glory road to crash-free, contest-winning free flights regardless of whether your model is an original craft, somebody else's design that you've re-doodled, or a standard kit.

Leopard-Moth

(*Continued from page 35*)

rubber tubing onto the wire before soldering the legs together.

Cover the fuselage sides with two sheets of 1/16", butting them together along the stringer. Do the same for the top and bottom. Cement the cowl sides, front and bottom pieces in place and sand to proper contour. Tack-cement the top cowl piece in place and sand to shape. Remove it and hollow it out for engine and fuel tank clearance. Cut off the removable portion—this may later be held in place with dress snaps or hinged along one side—and cement the rear portion in place at the windshield. Add the block above the windshield and the windshield dowel pieces. The top cabin window pieces should be cut to shape and cemented to celluloid pieces of the same overall shape before adding to the fuselage.

Cut the stabilizer to shape and cement in place. The elevators are cemented to a hardwood spar and hinged to the stabilizer with cloth strips. It will be necessary to angle the end of the fuselage to allow for downward travel of the elevators. Cut out and cement the fin and rudder in place, offsetting the rudder approximately ½" to the outside of the circle. Add the fillet. Install the bellcrank and the control horn and hook up the pushrod.

Air Trails FULL SIZE PLANS

GROUP 653 – ALL R/C MODELS

SQUARE SUE — the answer to a beginning radio controller's dream. Easily built, quick-constructed, twin-float air-prop powered cabin cruiser for remote R/C operation on water. (Fishermen use it for trolling while you loll at your ease in an anchored boat). Takes Cub .14 glow plug engine or similar power. Can use any receiver or escapement; Boomerang 27¼ mc. license-free receiver and E. D. clockwork escapement shown installed — but can accommodate any comparable equipment. Length, 32", beam 13".

MAGIC MAID — At long last, a realistic, low-wing scale-like R/C model plane. Span, 55"; features auto-like hinged hood that opens to permit easy adjusting of relay and receiver; removable power-pod nose. Test flown over 12 month period. Shown with Mills .06 Diesel, but will work well with any power plant of like power. Receiver and relay both feature plug-in mounts for quick interchange with other models. In flight resembles Lockheed's Little Dipper.

R/C MOBILE TV TRUCK —This won't win any free flight meets, but it'll sure stop traffic when you run it down the boulevard! Has flat plywood chassis which will also accommodate a scale Porsche sports car body (coming next month!). Length is 18 inches, width 7½ inches, height 8 inches. Shown with NBC paint job; can be decorated to match your local TV station's mobile pickup vehicles. Electric motor drive; uses war surplus wet cells for power. Steering is controlled remotely through 27 mc. license-free receiver

PRINT NAME, ADDRESS AND PLAN NUMBER PLAINLY. ENCLOSE COIN OR M.O. **50¢** (For all 3)

GROUP 653A

LEOPARD MOTH — Class A control line scale model of the famous de Havilland by "Red" Kochman, noted model designer. The Leopard, designated D. H. 85, was hopped-up version of the well-known "Moth." This little beauty works out to 38" wingspan, 24" overall length and takes a Cub .14 for power. Has also been flown with various small diesel engines. A real "must" for the serious scale fan.

THE BOSTONIAN — This ultra-simple contest-type rubber powered job was designed by Ed Dolby with the cooperation of The New England Wakefield Group for the new American Limited Rubber Event. A tried design, it has flown in contests for more than a year and racked up an impressive numbers of "wins." Vital statistics: 40" wingspan, 39" overall length. Can be flown with folding prop shown, or by beginners with ready-carved prop.

SABRE-WING — Don Broggini's remarkable flying wing which has won in free flight, PAA-Load and rise-off-water events! Span is 58 inches; there's no fuselage to build. Power is by Wasp .049. This is the 22nd successful flying wing design by Mr. Broggini and he says it's his very best. Uses paper parachute as dethermalizer. You'll be the talk of the town with this one! Climb and glide is like real hot conventional free flight contest craft.

PRINT NAME, ADDRESS AND PLAN NUMBER PLAINLY. ENCLOSE COIN OR M.O. **50¢** For all 3

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CURTISS P40F GAS MODEL

New Improved Model

48" Span. Free flight or U Control

Improved with new 2¾" alum. spinner and 3" Veco alum. disk semi-pneumatic rubber wheels. Planked type body, parts printed on balsa, and all parts. Set **$9.00**

REPUBLIC P47D GAS MODEL

35¾" span. ⅞" scale. Length 30½". One-piece moulded, clear plexiglas cockpit enclosure. 2½" scale alum. disk rubber wheels. Body planking full size plans. Uses B or C motor. Set **$5.95**

9' TAYLOR CRAFT GAS MODEL

9 foot span. Can use Radio control. Set has 36 ready cut wing ribs, cut plywood body formers, 16" carved prop, tail wheel unit, 2 full size plans, printed balsa, silkspan, etc. Uses "C" type motor, single, twin, or 4 cyl. motor. Set without motor or wheels, postpaid..... **$17.50**
Extra pair of 4½" airwheels, $3.00

VOUGHT F2G GAS MODEL

41" span. U Control B or C Motor. Scale model of 1949 Thompson Trophy winner. Set has 2½" rubber tired alum. disk wheels 4¼" aluminum cowl, body planking, moulded, clear plexiglas cockpit enclosure, plastic spinner, etc. This is one of the finest equipped models in the world. Const. set..... **$7.00**

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32" span. 1" scale. Const. set. Rubber driven..**$4.50**

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Gas model type.....**$7.00**

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32" span. 1" scale. Const. set. Rubber driven...**$3.75**

Elf 4-Cyl. Gas Motor

Elf ⅛ h.p. 4¼" wide. Price **$49.50**

BOEING PT17 GAS

45" Span. Can use 5 cyl. M5 motor to scale or B or C type motor. U control. Set has scale rubber wheels and all spec. parts, ready cut wing ribs, tail wheel unit and wheel. Const. set.. **$9.95**

Add 25c for postage. Catalog—10c coin

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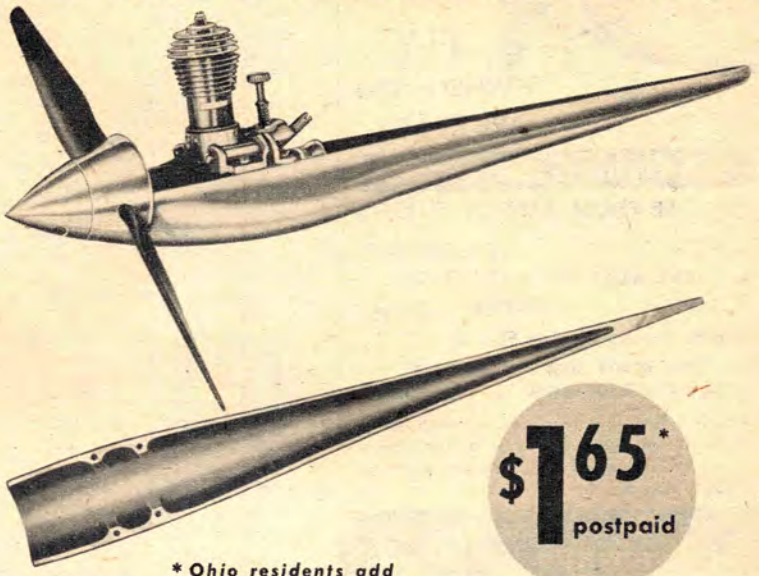
cast aluminum
½ A SPEED PAN



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Radial or beam mounting of all .049 motors is simple, and the aluminum construction helps reduce motor overheating. These extra-light aluminum-alloy castings require a minimum of finishing. Designed by experts to help you build safe, lasting ½A models, Vogel speed pans have been tested and enthusiastically received by leading speed experts.

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Model fans in your area will be wanting Vogel ½A aluminum speed pans. Write for details on how you can cash in.

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Ralph Vogel & Associates

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The decided "gull" of the wing at the fuselage juncture offered the only problem, as a spar of sufficient depth could not be used. The plywood wing joiner, finally decided upon, has proven quite adequate. If possible use six-inch stock for the wing sheets as they will insure a smoother airfoil. Cut the panels to shape, including the portion under the "gull" blocks. Join the bottom sheets with the wing joiner and cement the ribs in place. Block up the tips until the top surface is straight (no dihedral!).

Cement the top sheet in place between W-1 and W-6. Use plenty of cement and pins and check against warps. Cement the gull blocks and tips in place and carve to shape. Add W-7 and W-8 and the 1/16" sheet. Slot the underside of the wing at W-4 and cement in the plywood line guide. Cement the wing in place on the fuselage and add the wing struts. Slot the wing so that the struts butt against W-3.

Apply at least three coats of sanding sealer and then paint the entire model silver. Trim-Film does nicely for all the colored decorations.

R/C Roundup

(*Continued from page* 8)

wind also held the boys down a bit. Results: 1—Bob Weiland, Live Wire with Super Aerotrol; 2—Ray Morgan, original ship, 50mc Aerotrol; 3—Howard Reed, twin rudder original with Macnabb 465, Compound esc. & motor control. These winners received trophies, and there were 11 entrants. Leland came in 6th, after almost losing his ship in a flyaway.

The 8th Mirror Model Flying Fair will be held Aug. 30 at Floyd Bennett Field, Brooklyn, N. Y. This meet always has a big radio event. Write to the New York *Mirror* at 235 E. 45th St., New York 17, N.Y., for entry blank and get it in *early*—remember this is a restricted entry event.

FOR THE BEST BUYS ★ ★ THE LATEST IN RADIO CONTROL EQUIPMENT

TOPS IN QUALITY AT DOWN TO EARTH PRICES

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SPECIAL LIGHTWEIGHT SIGMA 5F, 5000 ohm coil, all the 5F features retained, approx. same weight as **SIGMA 4F.** Delivery from stock, bargain priced at..... $ 5.95

SIMGA 4F, 8000 ohm, new mfrd..... 7.00

GENERAL ELECTRIC MINIATURE, 10,000 ohm SPNC contacts, swell for hard tube sets $2.45, SPNO contacts..... 1.95

CRYSTALS, 27.255 mc./.04% tol. PETERSEN Z9A with ceramic plugin socket..... 4.95

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6 VOLT DYNAMOTOR, delivers 180 volt/50 ma, PM field requires low battery current..... 6.95

6 VOLT DYNAMOTOR, delivers 180 V/50ma & 250 V/125 ma, our biggest bargain..... 11.95

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GOOD TUBE BUYS

RK-61	$3.45	XFG-1	$3.35	1S4	$1.35
3S4	1.35	3V4	1.15	3D6 2 for	1.95
3A4	1.00	3A5	1.35	1S5	1.10

NEWEST TYPES RAYTHEON SUBMINIATURE TUBES FRESH BATTERIES STOCKED

No. 412 22½ volt $.90 No. 413 30 volt 1.15
No. 912 & 915, 2 for .15 No. 935 & 950, 2 for .19

"TINY ATOM" ELECTRIC MOTOR, 1½ V/.28 amp. 6000 RPM .187 in. oz. torque, 1/2000 HP..... 1.65

MOTOR with variable speed gear box..... 3.35

PRECISION WESTON 2" PANEL METER, 0-5 ma..... 2.95

SIGMA 4F RELAY COILS, 3000 & 10,000 ohm, fine for repairing those defective relays you have..... 1.25

QUENCH COILS for the MILLER & other hard tube sets our own mfr..... 1.45

TUBULAR TRIMMER CAPACITORS, 1-8 mmf., ERIE mfr..... .35

THIS MONTH'S SPECIAL

ESSCO SUPER III, TOPS IN RECEIVERS, 3 new subminiature inexpensive high efficiency tubes in modern circuit, low battery drain with reliable long distance relay action. Suitable for any type of control. Completed unit with tubes & relay..... $24.95

ESSCO SUPER II, a new 2 tube reliable receiver at single tube price, complete with relay.... 19.95

SIMPLE SINGLE, Mac's new 3S4 hard tube receiver at a kit price, complete with relay.. 12.95
Parts package to build your own..... 9.95

THE LORENZ RECEIVER PARTS PACKAGE, complete with tubes & Sigma 5F (special) relay..... 13.95

MILLER RECEIVER PARTS PACKAGE, all parts, tube & SIGMA 4F relay..... 11.95

AIR TRAILS PLAN R-101 RECEIVER PARTS PACKAGE, with RK-61 and Sigma relay..... 12.95

ESSCO SUPER X, our own new "HIGH POWER" SPECIAL, 2 tube circuit, full 5 watt input. Easier to adjust than single tube jobs. You can always bring them back with this set. Complete with tubes, antenna and cabinet.... 27.95

AIR TRAILS PLAN R-101 TRANSMITTER PARTS PACKAGE, all parts, tube, crystal antenna, & remote keying button..... 14.95

AIR TRAILS MARK II, 2 TUBE 5 WATT TRANSMITTER, complete unit in new standard metal case with meter, antenna, remote keying button & power supply (or batteries) nothing else to buy..... 32.95

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REVOLUTIONARY PROPORTIONAL CONTROL SYSTEM, Your single channel equivalent to multi-channel system. Operates servo-motor control in model. Complete control box, not a kit..... 14.95

COMPONENT BUYS

MINIATURE 25,000 & 10,000 ohm potentiometers..... .45

CERAMIC TRIMMER CONDENSERS, 4-30, 7-45 mmf..... .45

RECEIVER PLATE COIL, low loss with iron core slug..... .35

CLOSED CIRCUIT METER JACK..... .30

OPEN CIRCUIT METER JACK..... .25

STANDARD PHONE PLUG..... .35

PHONO PLUG & SOCKET for metering..... pr. .15

PHONE PLUG TO PHONO SOCKET ADAPTOR 1.00

AIR TYPE VARIABLE CONDENSERS, 15, 25, 50 mmf..... .45

REMOTE PUSH BUTTON KEYING SWITCH..... .45

MINIATURE TUBE SOCKET, wafer type 10c molded..... .15

SUBMINIATURE tube **SOCKETS,** 15c, **FLEA-CLIPS,** 4 for..... .10

HEARING AID TYPE BYPASS CONDENSERS, all values..... .15

CERAMIC BYPASS CONDENSERS, all values..... .10

HIGHEST GRADE ½ watt carbon resistors, all values..... .10

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ELECTRONIC SPECIALTY SUPPLY CO., 58 Walker Street, New York 13, N. Y. WAlker 5-8187

New organization in Michigan is the Detroit Radio Control Club. There are 12 regular members so far and activities are strictly informal—they haven't even bothered to elect officers. Meetings are spent gabbing, trading ideas, checking equipment, etc. Several members who are hams offer technical know-how to the beginners. Write to Jack Lemon, Jr., 26939 Greenfield Rd., Royal Oak, Mich., for further data, or you can call him at Lincoln 2-0666.

A recent letter from Louis Seitz mentions the Fathers and Sons Flying Club; don't know if this is an R/C group, but Louis—and his father, Fred—hail from New Milford, N. J. They use a 4.5 Watt transmitter in the trunk of the car. Car battery supplies power.

Some months ago, one of our best correspondents, Forrest Cole, used to write regularly from Smyrna, Ga. No word from there for a long time, but a recent note assures us they are still active in the Atlanta area. He also mentions a visit with Bill Woodall from Thomaston, Ga., and notes that Bill is still building them big and heavy; his latest is a 6-foot original which weighs 8½ lbs. and is propelled by a .64 Spitfire.

How would you like to fly R/C in a spot where a flyaway in *any* direction would put your plane in the drink? Well, that is the situation of an active group of R/Cers who operate on the tiny island of Key West, down at the tip of Florida. There are five flyers who have about the same number of planes in operation. Since a flyaway means a salt-water landing and soaking, these men are extra careful of their equipment. Even so, practically every one of them has had his ship head out over the water toward Mexico, Cuba or the Bahamas.

Charles Faraldo, who sent the data, is

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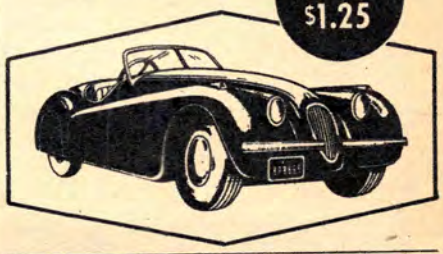

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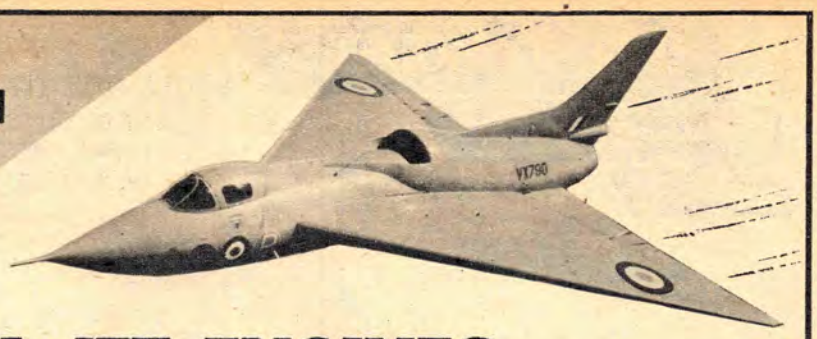
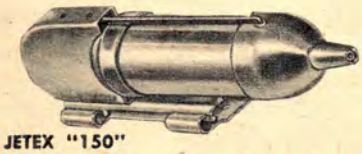
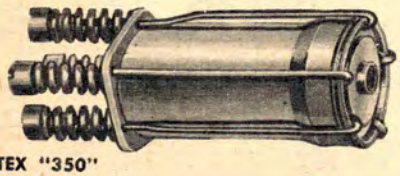


JETEX JET ENGINES

JETEX "50"



JETEX "150"



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- LIGHT WEIGHT, PRECISION MADE ALUMINUM PARTS
- LOW COST, SIMPLE, EFFICIENT DESIGN
- NO MOVING PARTS
- SAFE, CLEAN, SCIENTIFIC SOLID FUEL

SPECIFICATIONS	jetex jet engines		
model	50	150	350
ENGINE WEIGHT	.2 OZ.	.73 OZ.	2.5 OZ.
FUEL WEIGHT (min.)	.2 OZ.	.27 OZ.	.4 OZ.
TOTAL WEIGHT	.4 OZ.	1.00 OZ.	2.9 OZ.
① THRUST (max.)	.6 OZ.	1.75 OZ.	4.0 OZ.
DURATION—one charge	12 SEC.	18 SEC.	12 SEC.
DURATION—two charges	—	—	24 SEC.
DURATION three charges	—	—	36 SEC.
TORQUE	NONE	NONE	NONE
EXHAUST VELOCITY	1200 FS	1400 FS	1400 FS
OVERALL LENGTH	1 5/8"	3 1/2"	3 3/4"
MAXIMUM DIAMETER	11/16"	1"	1 3/8"
EFF. WINGSPAN	12-20"	18-36"	32-54"
② ENGINE PRICE	$1.95	$4.95	$6.95
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NOTE 2 INCLUDES: ENGINE, ACCESSORIES, MOUNTING CLIP INSTRUCTIONS, FUEL
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See your Dealer or write: AMERICAN TELASCO Ltd., Huntington, N. Y.

a strong Robot booster, while there are also Live Wires of both sizes and an R/C Master in operation, with four Bootstraps on the way. This group would like to hear from other R/C flyers, either in person, by mail, or over the air on ham radio. Address is 172D Poinciana Place.

Technical Topics. According to John Curry, the West Coast boys are getting hot on Fiberglas planes. He says that Jim Jensen of Pasadena has a Thermic 100 with a fuselage made of this material; balsa wing is covered with silk, and the ship weighs 3½ lbs. Jim uses it for ridge soaring and has had flights of over 1 hour. The ship is equipped with a McEntee 3-tube receiver and homemade low-drain escapement. Length of flights is limited by the number of turns he can supply the escapement. Jackson Ingham Jr. of Riverside is making an R/C ship something like that used by Howard Bonner. This is also a Fiberglas job, as is one that looks like a Goodyear racer, under construction by Harry Goodale of San Diego.

Now that transistors are on the market at more or less reasonable prices, (generally more, so far!) several R/C experimenters have started work to see if they can be made practical for R/C use. All those now on sale are low-frequency units, meaning that they are not too good for anything but audio purposes. These look good for the multi-tube receivers. While transitors have been made to oscillate as high as 400 mc. or more, these are strictly laboratory jobs. What we need now is one that will super-regenerate at 27 or 50 mc. If anyone has been able to work up something practical in the transistor line for R/C, we would like very much to hear from him.

We have had no comments yet about

(*Continued on page 75*)

DARWIN SHAKE-PROOF TANKS

See the complete line on display at all dealers. Tanks may be cemented into your plane, will not leak or the tubing shake loose.

Twenty eight different sizes from .14 oz. to 5.1 oz., 1-2 A to class D. Constructed completely of fuel proof brass.

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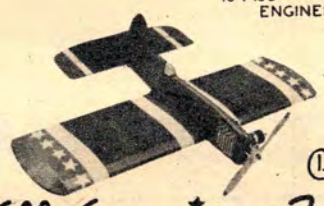
1/2 A ENGINES

1.95

"Infant WAGON"

The ready to assemble ALL BALSA stunt model for all ½A engines. It has been accepted as one of the most efficient, rugged and maneuverable models in its class by those who should know!

.04-.09 ENGINES



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All American Jr.

The number 1 model in the All American Training Team. Features simplicity of construction, ease of learning and long lasting ruggedness, all essential for basic training.

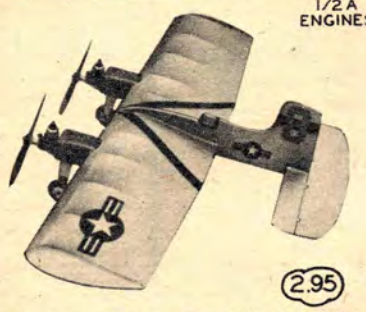
1/2A

LIVE WIRE "CLIPPER"

FOR PAA & FREE FLIGHT EVENTS...

Beginners in free-flight or experts looking for an easy to handle design will find this realistic looking model ideal for them. Use it for PAA load and regular free flight events. 2.95

1/2 A ENGINES



2.95

"A/2 TWIN"

The "Twin" is a truly sensational design which brings twin engine flying within everyone's reach. A semi-scale model of the famous Grumman "Skyrocket", it provides the simple means of enjoying the thrill of twin engine flight!

"1/2A CARRIER EVENT MODEL"

.06-.09 ENGINES

2.50

All American Jr.

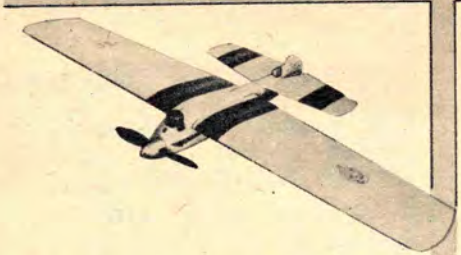
The number 2 model of the All American Training Team is this stunt-trainer designed around the popular .09 engines. Learning stunt flying becomes simple with this correct combination, slow enough to learn with, yet responsive to keep you out of trouble!

.08-.15 ENGINES

"LIVE WIRE" R/C TRAINER

This is the widely accepted basic-trainer for radio controlled flight. Having been developed for R/C flight primarily it has all of the features which can make your every flight successful, including controlled climb, exceptional stability, excellent maneuverability and extreme ruggedness. The construction is simple and straight forward while the model remains easy to fly!

An exclusive feature is the removable R/C unit that allows easy bench checks of all R/C equipment, use of the same unit in several models and alterations or changes in the equipment with the least trouble. Suitable for ALL makes of radios. Copied perhaps, but certainly never equalled! 6.95



"Stunt WAGON"

FOR .19-.36 ENGINES.....

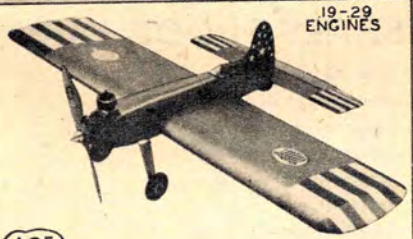
STUNT WAGON "30" ____ 5.95

FOR .49-.65 ENGINES.....

STUNT WAGON "60" ____ 7.95

Supreme Stuntability!

.19-.29 ENGINES

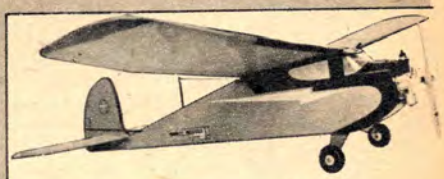


4.95

All American

The number 3 model of the All American Team is a full stunt model using dmeco's exclusive "Assymetrical Stability." Developed around the new powerful .19 engines, independent tests have shown it to be a very outstanding precision flight model. Simple straight forward assembly have made it a favorite with those who want superior performance with the least amount of work.

NATIONAL SR. COMBAT CHAMPION!



LIVE WIRE "KITTEN" 1/2A ENGINES

FOR R/C SPORT FLYING....

Developed for use with the new compact light weight R/C units the "Kitten" takes every advantage of this fine equipment. The "Kitten" is one model that can be flown in restricted areas, a football field is large enough! The kit is unusually complete and includes special R/C hardware, dural gear and wheels. Its outstanding design gives the ruggedness and maneuverability for all types of flying, assemble it quickly and enjoy many fine flights! 3.95

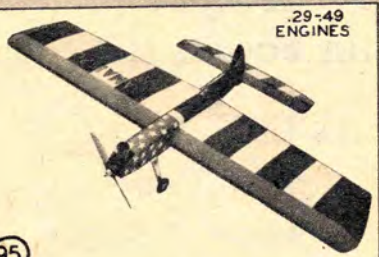
.19-.29 ENGINES

3.95

"Sportwing"

Here is a model that is as modern as the new sports cars, yet it is a design that has been tried and proven to be outstanding in every respect. Especially suited to stunt and combat the kit is quickly assembled from finished parts using alignment jigs that assure a perfect model every time!

.29-.49 ENGINES



5.95

All American Sr.

The "Star" of the All American Team is this contest winning "Senior," here is the model that even beginners can fly to first place laurels! The design is the culmination of years of effort to provide a fine high performance model that is simple to assemble, easy to maneuver and a cinch to win for you in any competition! Dmeco's exclusive "Assymetrical Stability" provides the means to such fine performance from a model with so little power.

NATIONAL JR. STUNT CHAMPION!

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✓Check THESE POINTS!

- ✓ 1. Correct design, tried and proven!
- ✓ 2. GIANT full size plans with details!
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- ✓ 4. Precision pre-fabrication by experts!
- ✓ 5. Ultra modern dural gears!
- ✓ 6. Complete deluxe hardware!
- ✓ 7. Unconditionally guaranteed quality!

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PRODUCTS OF
THE DE BOLT MODEL ENGNR. CO.
WILLIAMSVILLE, N.Y.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Air Trails RADIO CONTROL MODELS

McEntee's Comments

(*Continued from page 73*)

our faulty arithmetic at the top of page 68, March '53 issue; the "40 ma. at 150 V. input" we mentioned was intended to include the screen current, but this latter does not figure in the power input, as far as the F.C.C. is concerned, since it is not "plate input." In a screen grid tube, only the power going into the plate circuit is figured in, when computing the power input. The 150 V. mentioned is rather an odd value; it happened to be all our set of rather stale batteries would produce.

Ever hear of the "Wee-bot" design? Neither did we, until we received a pic of it from Callbie Wood, Jr., Wilson, N. C. It is a two-third size model of the regular 5 ft. Robot. The plane weighs 14 oz. It is fitted with a Mac .09, and Callbie says it is plenty hot with this engine. He has been able to get nice loops and wingovers. The ship carries a Control Research 2-tuber, and the transmitter is a triode-connected 3A4. The nose wheel has a double torsion mounting. Callbie notes that there isn't much R/C activity in his part of the country; we are sure he would welcome a call from any other radio flyers nearby.

We have heard some complaints from users of the Bonner Compound escapement that it would not work on a hot ship. Knowing that it has been flown on plenty of hot ones on the Coast, we asked Howard Bonner for comments. His main suggestion is to use this escapement only with torque-shaft connection to the rudder (not with any sort of pushrod rigging). Also that the torque shaft and escapement be mounted just as shown.

Howard does not advise using more rubber, nor tinkering with the spring tension. He does note that it helps to have the control surfaces balanced both statically and aerodynamically, with the hinge line about 25% to the rear of the leading edge. Since he uses this escapement for both rudder and elevator in his present ship, and said ship has been doing consecutive loops, inverted flight, screaming vertical dives and other high-speed maneuvers, it seems to prove that it can be done.

Commercial News. For the boys who want to study up on an advanced R/C system, we advise perusal of a new book on R/C entitled "Remote Control by Radio," published by the Philips tube concern in Holland, and available in this country for $1.50 from Elsevier Press, Inc. (402 Lovett Blvd., Houston 6, Texas). The book describes in detail two complete R/C systems that have been installed in model boats. The simpler provides two channels for rudder and motor control, and works by amplitude modulation. The more complex system gives eight independent controls over one radio channel, through pulse modulation.

The "Control Master" line of R/C equipment, produced by Hobby Enterprises (74 N. Park Ave., Bay Shore, N. Y.) now includes these units: Transmitter, fitted with a single 3D6 tube running at 4½ W/ input; case is large enough to hold four

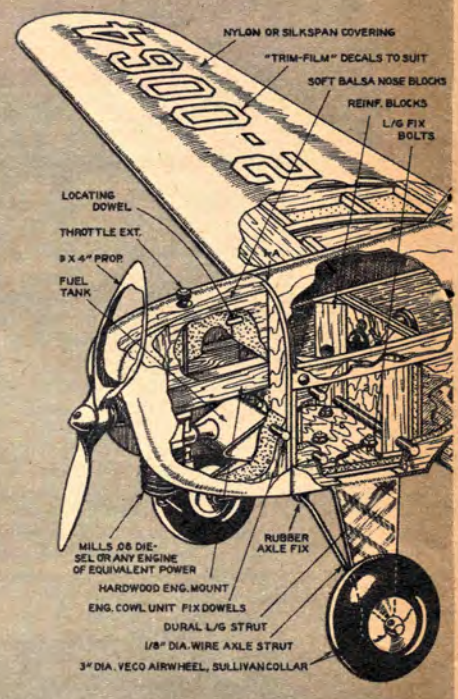
(*Continued on page 89*)

"Gentleman Jim" Walker, genial proprietor of the American Junior Aircraft concern, test gliding his R/C model at the Nationals after a frantic, fantastic 3-day-and-night repair job. To the complete amazement of all contestants, Jim rebuilt the model after a bad wreck and came in 3rd! He won the National R/C championship several years.

Magic Maid

By FRANK VAN BUREN

Plenty of space! Aluminum "hood" swings open for checking; plug-in relay held in hand.



You'll be the talk of the town when you get this low-winger into the air!

This low wing radio control beauty is for the model builder who wants a somewhat "different" craft. Although not complicated *Magic Maid* may appear a little more complex than the currently average cabin model.

The removable nose as on JASCO's R/C Master proves valuable in a hard landing and can be wedged easily for thrust changes. Another feature: you can quickly plunk in a more powerful engine when the model is fully adjusted; extra power is a "must" if you want to fly in windy weather.

The radio equipment is readily accessible without removing vital parts. Just lift the "hood" as on an auto and everything is available. Everything needing checking or adjustment is accessible through the cockpit. The escapement is well forward; a brass rod serves as the torque tube.

Start the fuselage with two sides cut from clear, straight-grained, firm balsa. Cut bulkheads, run grain as indicated. Assemble sides upside down on flat table by cementing the aft ends together, then starting at the front and working back, adding the bulkheads.

Add top bulkheads. These are not notched; the stringers are cemented on top. A scrap of stock for a temporary rudder and two soft fairing blocks are tack-cemented in place at the rear and the turtle deck blocks shaped from the stringers to the fuselage end.

Bulkheads for the landing gear and the Lord mount are each made up of two plywood bulkheads (birch preferred) with balsa filler, cut to fit with all required holes made, then carefully cemented in place.

Add the plywood firewalls and the triangular balsa strips used as gussets in the battery compartment. Drill holes for the dowels and cement them in place. Add the plywood switch panel.

The top cowl is cut from .025 SO (soft) aluminum and bent around a large round bottle or small jug. Drill four holes for the screws which act as pivot points and retaining stops.

The engine unit is made by bolting the engine to two bearers and then cementing the latter to the top block which should be as wide as the outside distance between the bearers and deep as shown. A block is then cemented along each side. Note the grain direction. When dry, remove engine and tack-cement cowl in place, using the dowels to align the nose. Carve the nose, using section 1a as a pattern. In this manner the nose will follow the contour of the fuselage and not look like an undersized derby on a 300-pounder. The equipment used will dictate its own positioning, but all equipment should be installed before the bottom is covered.

The landing gear can be cut from 5/64" 24 ST dural and all holes drilled while it is flat. Then bend to shape. Caution: do not bend corners too sharp! Form the 1/8" wire axle and insert in the gear. Solder washers in position; use rubber to hold axle in position. The entire unit can now be bolted in place. The tail skid is bent from 1/16" O.D. wire and secured.

The vertical fin can be made up by cementing the necessary medium strength balsa sheets together to make up the required width. The rudder can next be cut and the edges rounded. Cloth hinges can be used but must work freely.

Remove the rear fairing blocks, take out the temporary center filler and cement fin in place. This entire unit is cemented in place only after the brass tube is working freely. See that the rudder is on straight.

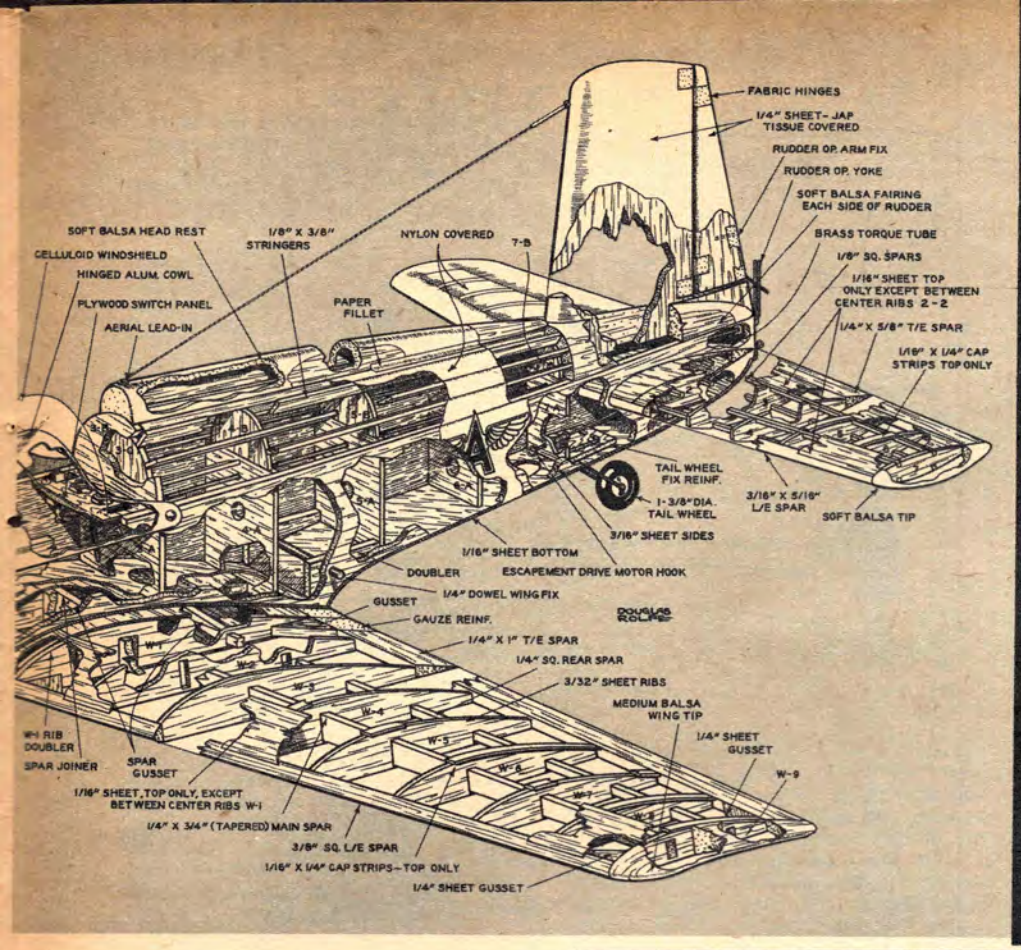
The headrest can be carved from soft balsa and hollowed, but don't cement in place until after the covering is applied. To seal any crevice that may appear, a paper fillet is employed. The windshield is cut and held in place with eyelets. The entire balsa sections—sides, cowl and rudder—can be covered with tissue to help keep the final weight down after doping.

The stabilizer is next. Cut the ribs from 1/16" sheet and cement to the trailing edge and lower rear 1/8" sq. strip over plan. While this is drying add the top 1/8" sq. strip and the leading edge. Remove from plan and add the other two 1/8" sq. spars. Sheet the leading and trailing edges on the top only, and on top and bottom at center. Add the tips and shape. The cap strips can now be cemented in place. When dry, sand the entire unit and re-cement every joint. Slip the stabilizer in place and be certain it lines up. Trim the sides to achieve this. Cement the stabilizer in place, using ample cement.

The wing is next. It can "make or break" the model. Warps are hard to compensate for, so care should be taken to assure that all parts are well cemented and re-cemented and given ample time to dry. The drying should occur while the wing halves are on a flat surface. Care should be exercised to see that both panels are in perfect alignment.

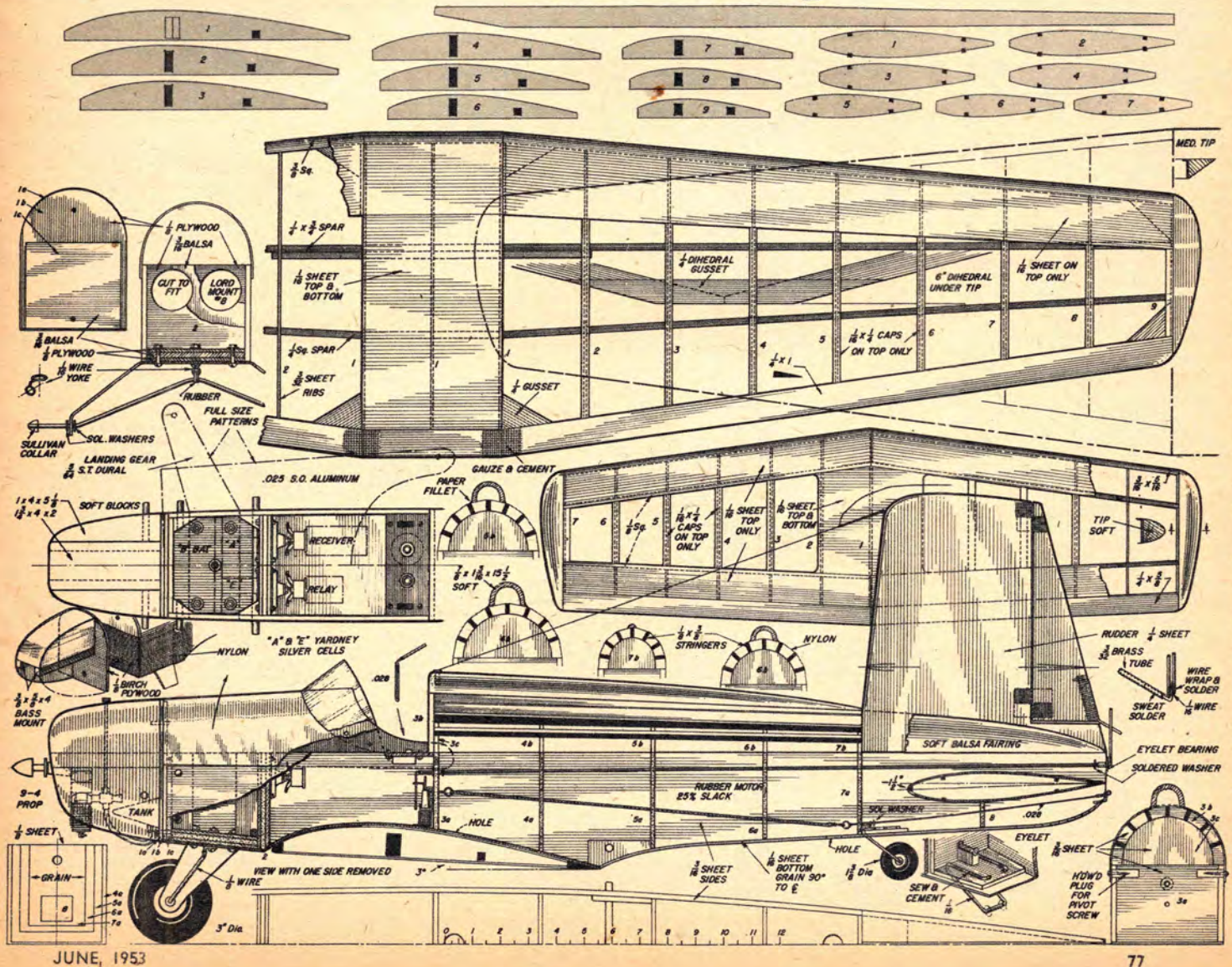
Cut the ribs from hard balsa. By making the largest ones first, the small ones can be fashioned from the scraps and much material saved. Assemble the wing in halves over the plan, checking to see that the ribs line up true and are cemented completely around the spar. Sheet the panels and capstrip while the wing is flat on the bench. The halves are joined over plan for alignment. Cement gussets in place. When dry, sheet the center top. When dry, remove and sheet the bottom. See that there is no strain placed on the wing while this is being done. Add the tips and shape. Sand the entire wing, cementing any weak point.

(*Continued on page 87*)



Motor box removable like RC Master; start with small motor; bigger, later.

Ain't she a purty sight! In the air model is easily mistaken for a full-size aircraft.



If you use the full-size working drawings they'll speed up construction time a lot

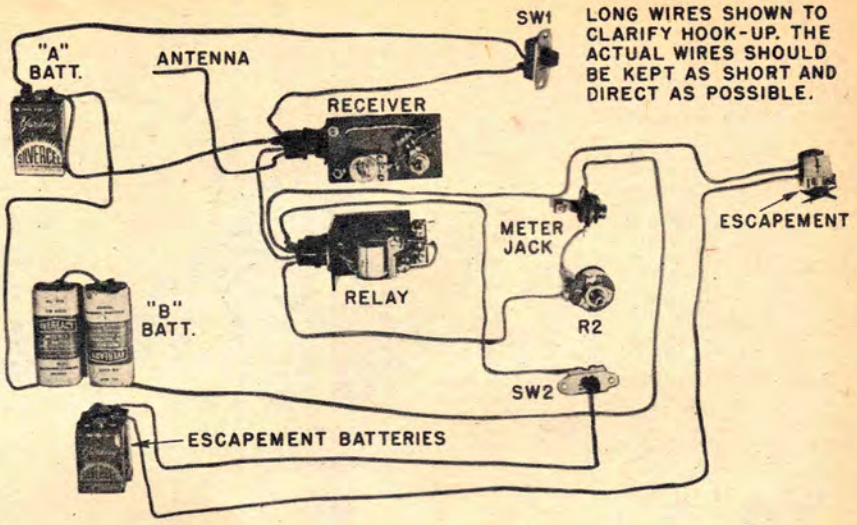
■ This is the plug-in type receiver used in the Magic Maid R/C plane. A typical gas circuit, it is notable for the quick-disconnect feature and also for the Silvercels which it uses. Note, too, that the relay is also a "plug-in" affair.

Although the gas tube circuits are admittedly somewhat tricky to adjust, when working properly they are about the most sensitive receiver possible, considering their size and weight. The tubes themselves vary in their characteristics, and it is necessary to adjust the circuit values to take care of tube variations.

The relay is mounted separately from the receiver to make for a better distribution of weight and to enable the equipment to be effectively shock-mounted. The plug-in feature enables one set of radio equipment to be used on more than one model and it makes for accessibility in servicing.

The steps to be followed in the construction of the receiver are as follows:

1. Cut and drill the bakelite base.
2. Put all eyelets in place and set them with a small hand punch.



"AT" PI-27 Rcvr

For quick exchange from model to model, this 27¼ mc. receiver and relay plug in like phone jack. Let's go, Jack, let's go!

By LEO C. CUNNIFF, W2OEH

3. Mount the antenna condenser, the coil, choke and other small components. Do not mount the tube at this point.
4. Wire all components into the circuit (except tube). Leave leads that connect to the plug long enough for soldering into plug.
5. Bend and drill the two brackets for relay and receiver.
6. Mount the plug on the receiver bracket by means of the snap ring that comes with the plug, and mount the bracket-plug assembly to the receiver base. Run the wire leads through the holes in the pins, and solder in place.
7. The tube is now soldered in place. Scrape any lacquer off the leads and grip the tube lead between the glass envelope and the soldered connection with a pair of long-nosed pliers while soldering. This will conduct the heat away, and prevent possible damage to the tube.
8. The relay is assembled on its bracket and wired into the plug as was done on the receiver.

The coil is wound as shown. After the equipment has been tested, the winding can be coated with coil dope or liquid polystyrene, to hold the turns in place.

The choke is made on a polystyrene, bakelite or lucite rod or tube ¼" in diameter and 1" long. After drilling a hole and pressing in the wire leads which can be about #20 solid wire, the form is wound full of #30 enameled wire.

After the equipment is completed, it should be set up and bench tested before installation in the plane. Before turning on the switches, rotate the potentiometer full counter-clockwise so as not to exceed rated tube current.

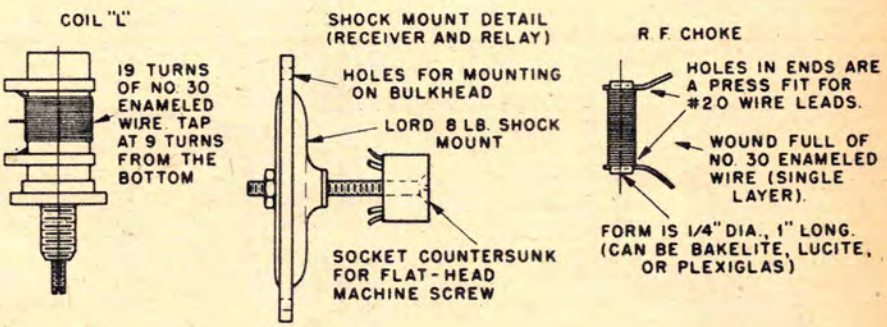
Put the antenna coupling to minimum, connect a 24" antenna and turn the receiver switch on. Adjust the potentiometer for a reading of about 1.2 ma. on the meter.

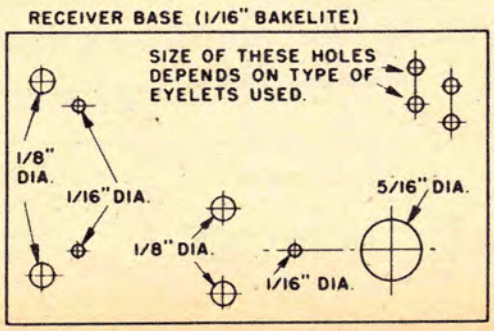
Turn the transmitter on and tune the receiver to the transmitter by moving the coil slug in or out of the winding area. As the receiver is tuned in, the current should drop to a value of 0.1 ma. or less. Due to component variation it may be necessary to add or subtract turns from the coil to obtain proper tuning. Add or subtract one or two turns at a time until the receiver tunes as noted above.

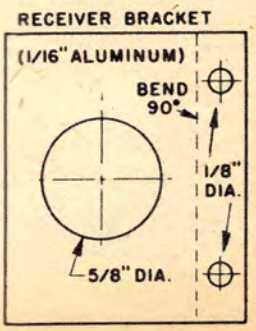
Now is the time to learn the effects of the various controls, with equipment on bench. This table shows what each control does to circuit, and how it affects operation.

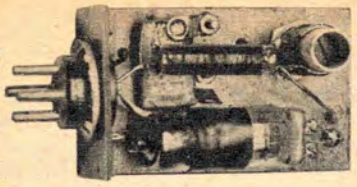
CONTROL	FUNCTION	EXPLANATION
Potentiometer	Controls current through tube and relay.	Increasing resistance decreases current. Wiring shown will cause resistance to decrease with clockwise rotation.
Tuning Slug	Tunes receiver to transmitter.	Running slug into the winding area increases coil inductance, and decreases the frequency that the receiver is tuned to.
Antenna Coupling	Controls amount of signal fed into receiver.	Increasing coupling raises the idling current of the receiver, but also decreases the dip on the signal. New tubes require low couplings; as they age, coupling is increased.

The relay should be adjusted to pull in at about 0.9 ma. and release at 0.7 ma. This adjustment is made by means of the three

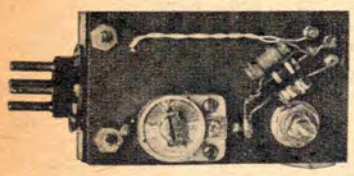

COIL "L"
19 TURNS OF NO. 30 ENAMELED WIRE. TAP AT 9 TURNS FROM THE BOTTOM
SHOCK MOUNT DETAIL (RECEIVER AND RELAY)
HOLES FOR MOUNTING ON BULKHEAD
LORD 8 LB. SHOCK MOUNT
SOCKET COUNTERSUNK FOR FLAT-HEAD MACHINE SCREW
R.F. CHOKE
HOLES IN ENDS ARE A PRESS FIT FOR #20 WIRE LEADS.
WOUND FULL OF NO. 30 ENAMELED WIRE (SINGLE LAYER).
FORM IS 1/4" DIA., 1" LONG. (CAN BE BAKELITE, LUCITE, OR PLEXIGLAS)







Receiver; front



Receiver; back

Relay; front

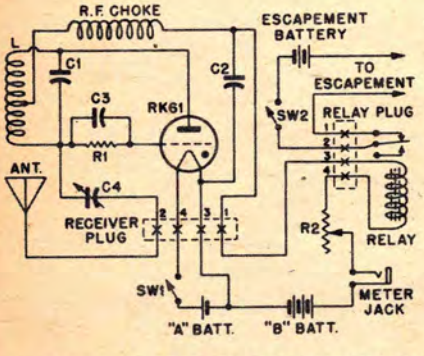
screwdriver adjustments on the relay. The potentiometer is used to set the proper value of current. The relay armature should always have air clearance between it and the pole face of the coil, to prevent relay sticking.

The sockets for the receiver and relay are drilled and countersunk for a small flat-head screw and then attached to the shock mounts. The shock mounts are attached to the bulkheads with four bolts at the corners.

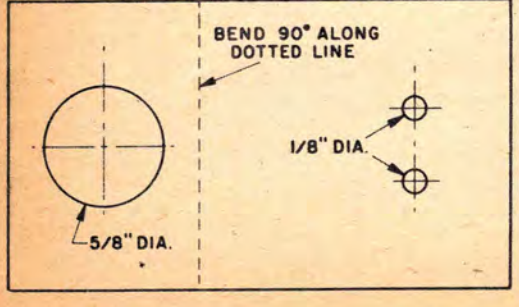
The interconnecting wiring is shown in the spread-out view of the radio equipment. In the actual wiring keep leads as short and direct as possible, yet allow some slack to take care of shock and vibration.

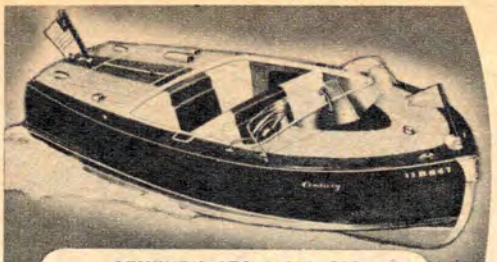
Complete check of receiver operation should be made before test-hopping. Some flyers test-hop without radio equipment, but the writer has saved ships from crashing on the initial flight by the use of the radio. Receiver tuning should be checked on the field at a distance of several hun-

(Continued on page 86)



RELAY MOUNTING BRACKET (1/16" ALUMINUM)





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Chris-Craft 47' Buccaneer	B-3	7.95
Century 20' Resorter	B-4	3.25
Century Sea Maid 20'	B-5	2.95
Century 20' Sea Maid	B-5	2.95

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Pint
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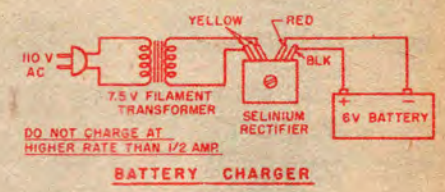
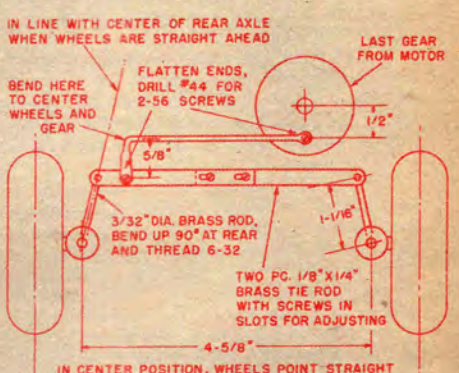
This issue a truck, next month a scale model of the German Porsche sports car! Yessir, we've planned it so you can get your radio controlled vehicle on the road in easiest fashion, then later switch over to the automobile model. We think you'll find this one of the most engaging model projects you've ever tackled. License-free 27.255 mc. receiver and transmitter are used. Wheels are Veco 3½"; R/C setup is not complicated.



BATTERY CHARGER


IN LINE WITH CENTER OF REAR AXLE WHEN WHEELS ARE STRAIGHT AHEAD
LAST GEAR FROM MOTOR
FLATTEN ENDS, DRILL #44 FOR 2-56 SCREWS
BEND HERE TO CENTER WHEELS AND GEAR
1/2"
5/8"
3/32" DIA. BRASS ROD, BEND UP 90° AT REAR AND THREAD 6-32
1-1/16"
TWO PC. 1/8"X1/4" BRASS TIE ROD WITH SCREWS IN SLOTS FOR ADJUSTING
4-5/8"
IN CENTER POSITION, WHEELS POINT STRAIGHT AHEAD (NO TOE-IN OR TOE-OUT)

STEERING GEOMETRY TOP VIEW

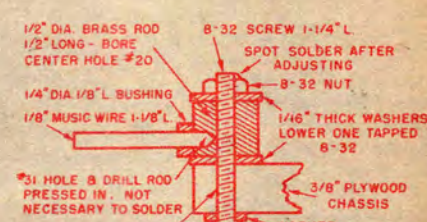
R/C MOBILE TV TRUCK

By HOWARD McENTEE W2SI

■ Radio control of model planes has proven so successful that builders have been expressing interest in R/C work with models of other types. Boats and cars are an ideal medium for such experiments; in either case, loss of control or "pilot trouble" does not result in ruination of your handiwork, and possible loss of many dollars' worth of equipment.

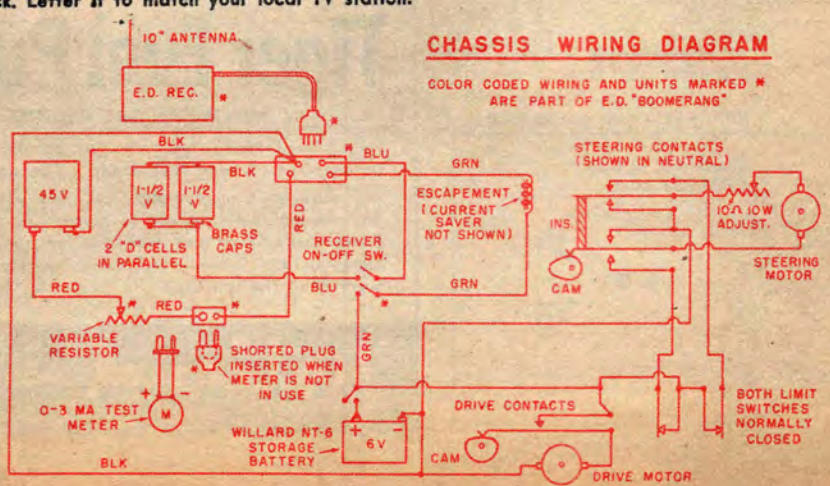
For those who want to get their R/C chassis running as quickly as possible, we suggest a simple bus body, which is nothing more than a box. If painted up and lettered, it will look very realistic. Some possibilities for this box style of body are milk trucks, parcel delivery vans, and television "pickup" vehicles. We chose the latter. Though the chassis was a bit short to make an exact scale copy of this TV truck, we followed it as closely as possible.

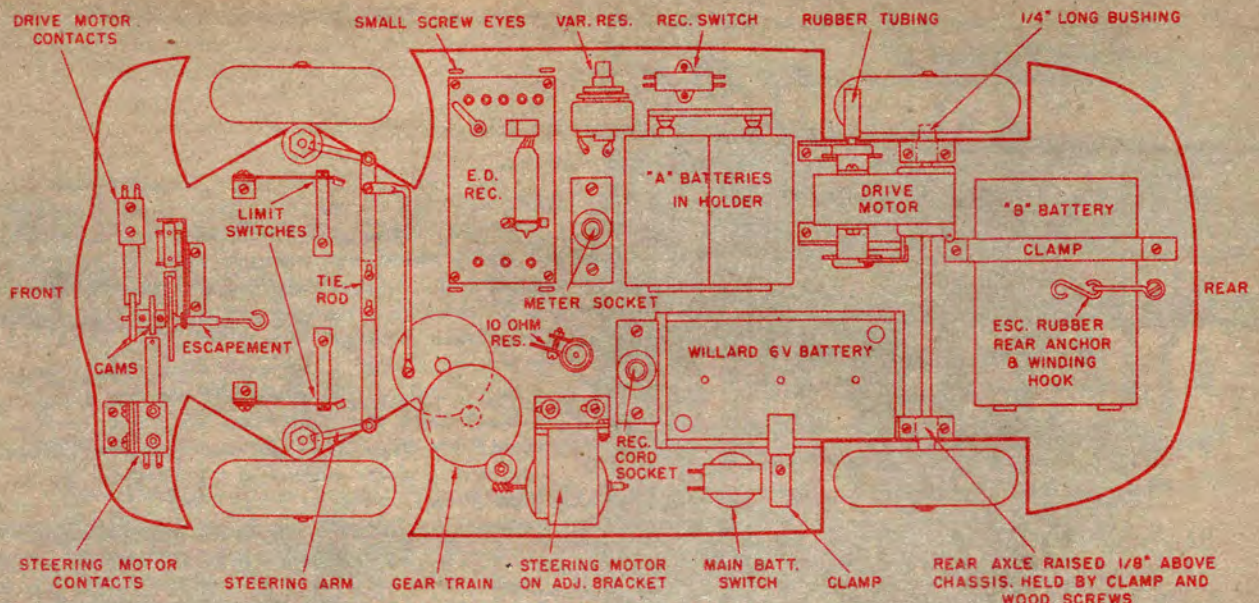
Of course, if you select this type of body right from the beginning, you would not trim the plywood chassis as shown. However, next month a scale Porsche automobile body will be presented, so if you want (*Continued on page* 88)


1/2" DIA. BRASS ROD 1/2" LONG - BORE CENTER HOLE #20
8-32 SCREW 1-1/4" L.
SPOT SOLDER AFTER ADJUSTING
8-32 NUT
1/4" DIA 1/8" L BUSHING
1/8" MUSIC WIRE 1-1/8" L.
1/16" THICK WASHERS LOWER ONE TAPPED 8-32
#31 HOLE & DRILL ROD PRESSED IN. NOT NECESSARY TO SOLDER
3/8" PLYWOOD CHASSIS
WASHER
BORE HOLE IN PLYWOOD: TAP 8-32 COAT HOLE & SCREW WITH MODEL CEMENT & SCREW IN TIGHT

FRONT AXLE DETAIL

You'll find the young fry flock around your TV truck. Letter it to match your local TV station.

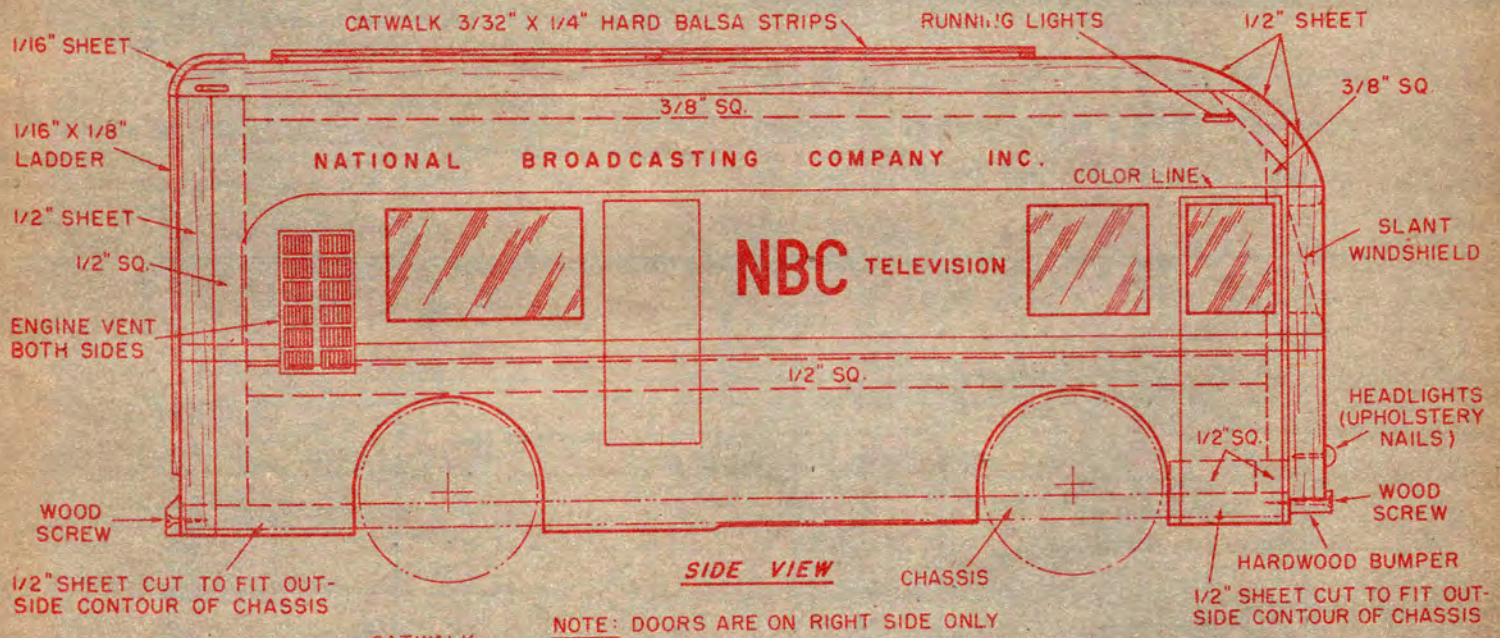




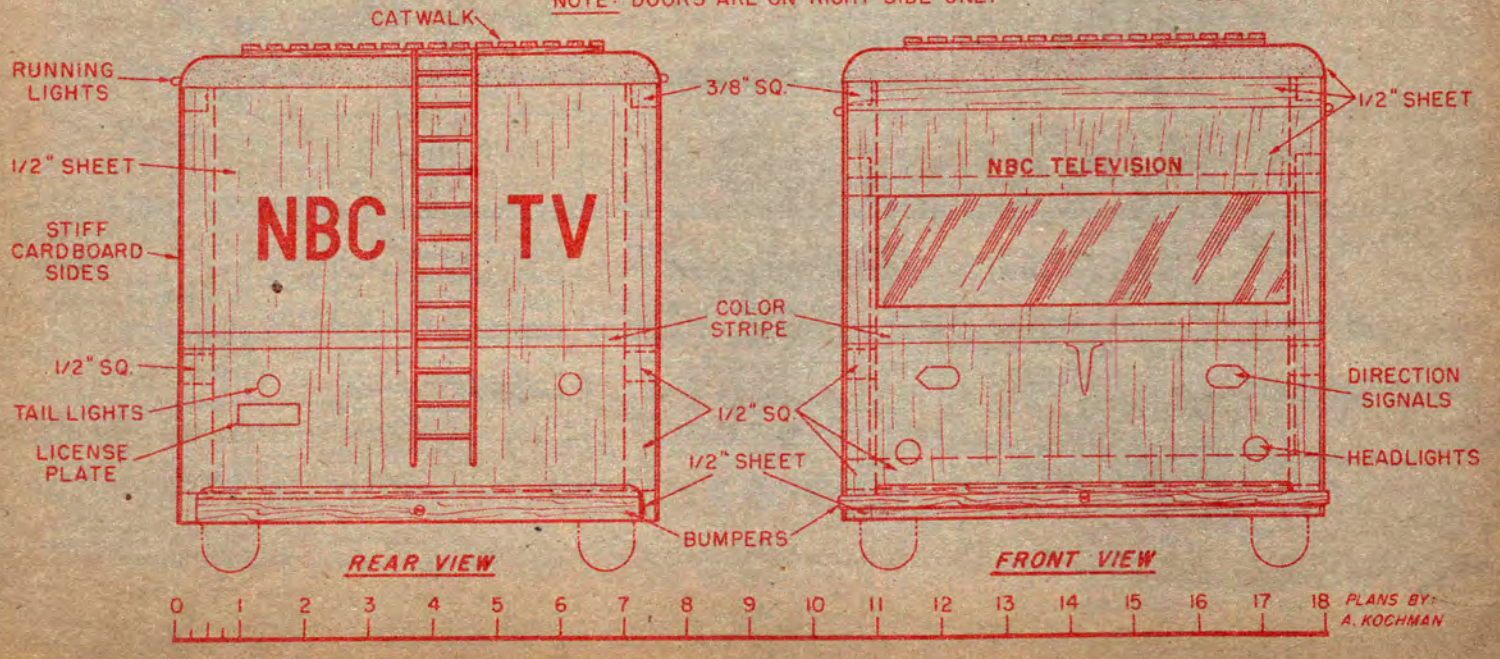
TOP VIEW CHASSIS LAYOUT

This baby will never win a free flight meet but you'll stop traffic with her every time!

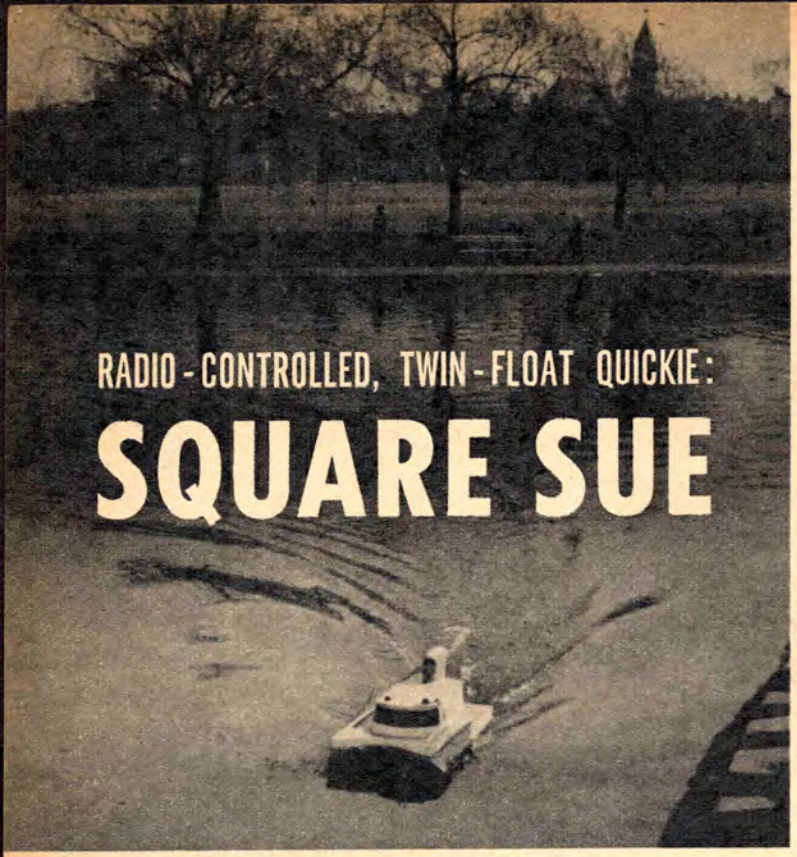
Next issue brings a model sports car body to fit this radio-controlled chassis



NOTE: DOORS ARE ON RIGHT SIDE ONLY



PLANS BY: A. KOCHMAN



RADIO-CONTROLLED, TWIN-FLOAT QUICKIE:

SQUARE SUE

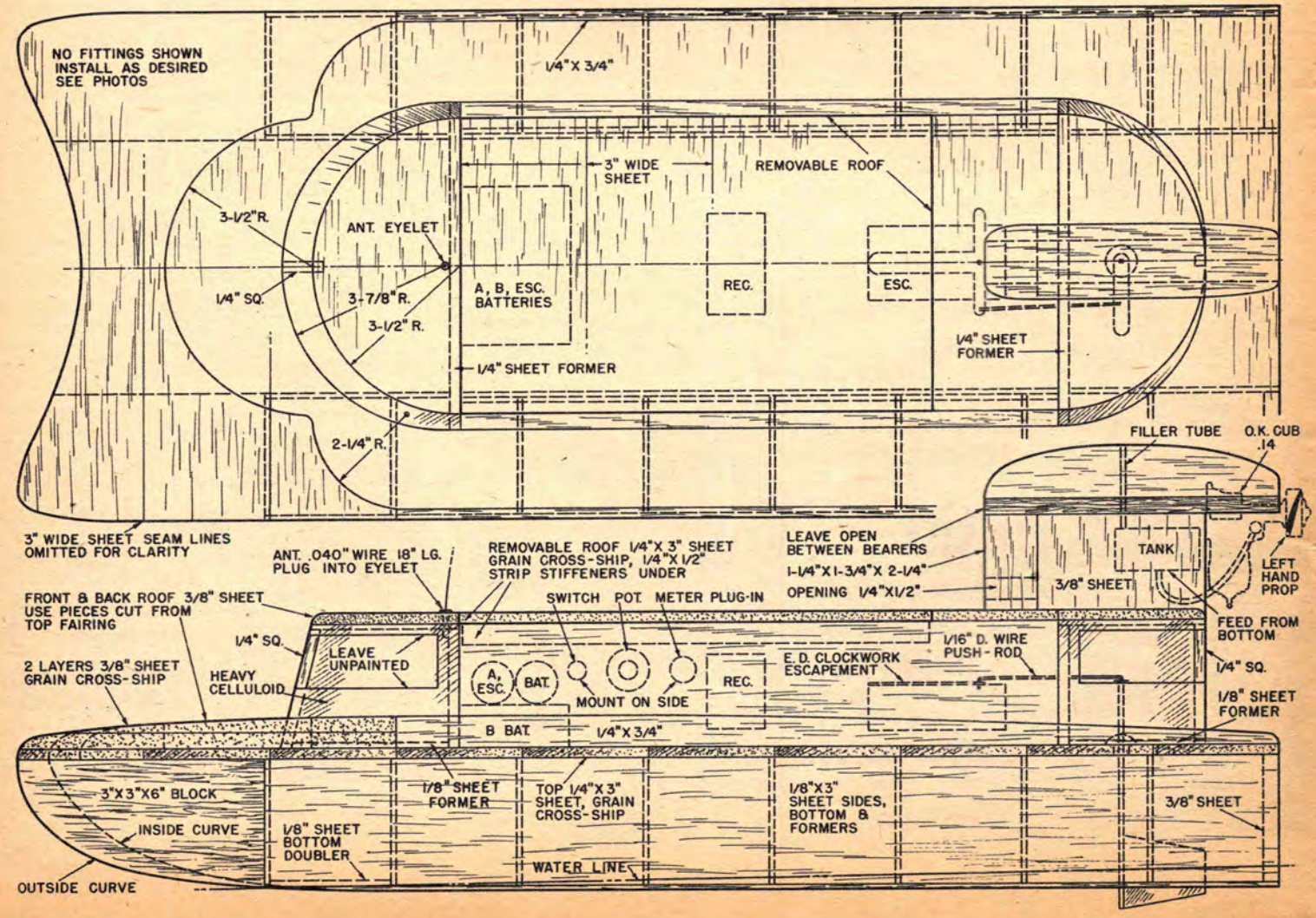
Want to get your feet wet in radio control? Here's the perfect answer: quick . . . easy . . . and crack-up proof!

■ *Square Sue* was especially designed for those who want to get into radio control boat work without knowing a port from a chine. This model will get you operating on water with the least amount of work. There are no difficult steps here, just straightforward model airplane type construction.

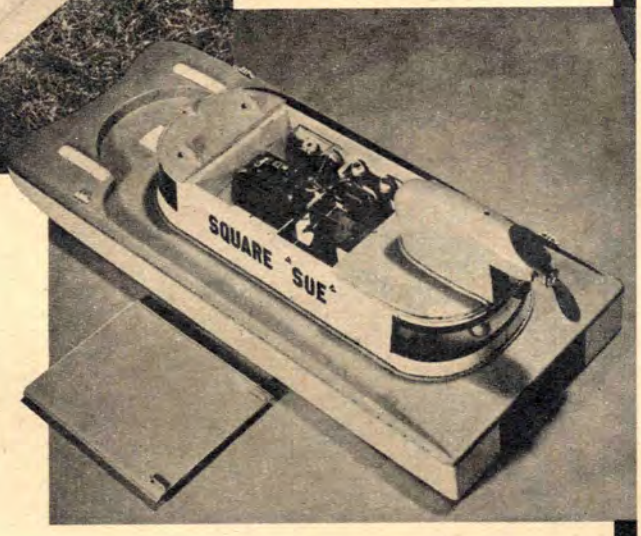
The cabin purposely was made simple; it can be altered easily to suit your taste or to house the equipment you use. The E. D. Boomerang was a cinch for us; it came wired and needed only to be dropped in—presto—we were ready to do business. We used the E. D. clockwork escapement since it was strong enough to operate the water rudder directly. The O. K. Cub .14 provided plenty of power. Our "club" prop, which is left-handed, was a snap to carve.

Start with the pontoons; cut three-inch sheets to length for the sides. Cut the required bulkheads and cement in place, then add the bottom. Cement in the nose blocks, carve to shape. Take required sheets and cement together for the basic flat deck that holds the pontoons together; when dry cement the pontoons in place. Add the two three-eighths sheet that form the top front fairing. These are tack-cemented in place and the parts that are cut out for the semi-circles are laid aside for the front and back cabin roof. After the fairing is roughly shaped cement it in place and finish. Cut out the side rail and cement in place.

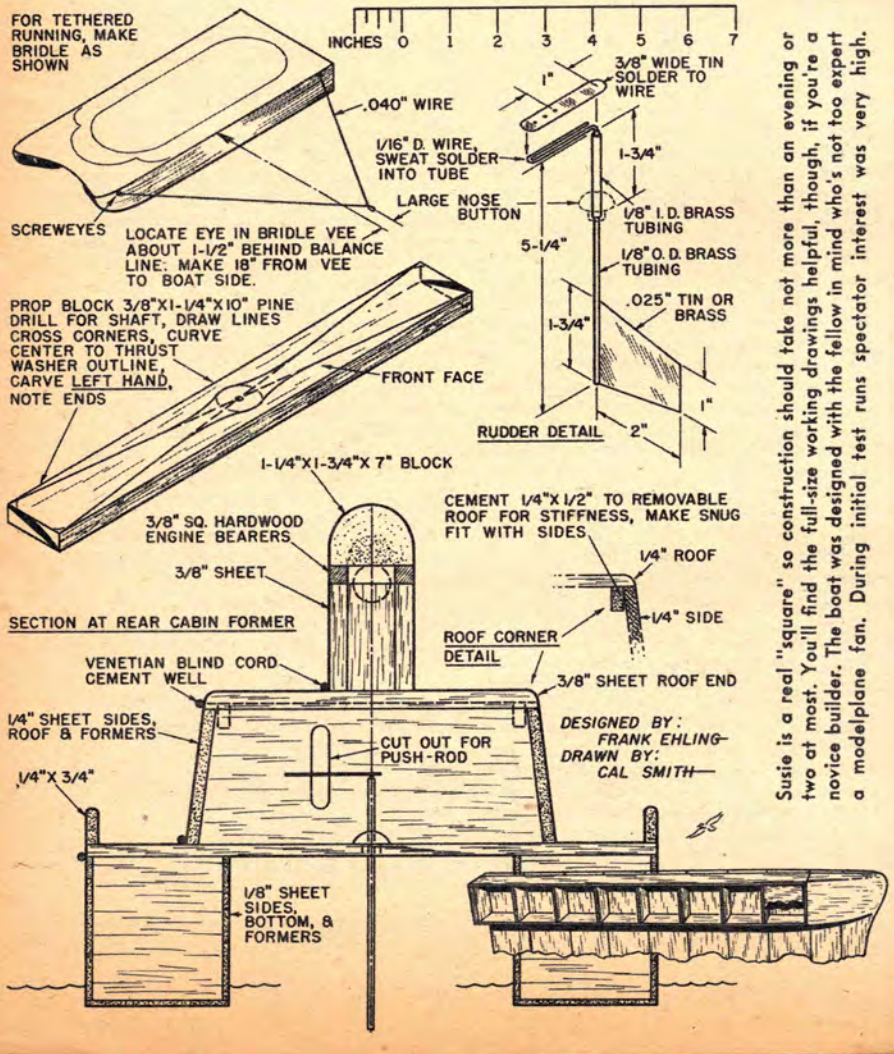
The rear covering is now added; when dry it is sanded to shape. Drill a hole for the nosebutton that holds the tubing in which the rudder post moves. Force the tubing into the nose plug and cement the nosebutton in place. Mount the escapement and connect with the wire that serves as the rudder post. "Zero" the escapement and solder the rudder in place—this is cut from tin. See that the rudder is (*Continued on page* 86)



How simple do you want your models? You'll find Square Sue mighty hard to beat! First you make two built-up pontoons, then you add the front balsa blocks. Sand to shape. Add platform deck. Then the deck house, etc. Easy, n'est-ce pas? At left we see author Ehling filling the tank. On the water (see action photo on opposite page) Square Sue takes on a right smart appearance as she scoots around at your command.



By FRANK EHLING


FOR TETHERED RUNNING, MAKE BRIDLE AS SHOWN
INCHES 0 1 2 3 4 5 6 7
3/8" WIDE TIN SOLDER TO WIRE
1"
.040" WIRE
1/16" D. WIRE, SWEAT SOLDER INTO TUBE
1-3/4"
LARGE NOSE BUTTON
1/8" I. D. BRASS TUBING
SCREWEYES
LOCATE EYE IN BRIDLE VEE ABOUT 1-1/2" BEHIND BALANCE LINE; MAKE 18" FROM VEE TO BOAT SIDE.
5-1/4"
1/8" O. D. BRASS TUBING
.025" TIN OR BRASS
PROP BLOCK 3/8"X1-1/4"X10" PINE DRILL FOR SHAFT, DRAW LINES CROSS CORNERS, CURVE CENTER TO THRUST WASHER OUTLINE, CARVE LEFT HAND, NOTE ENDS
1-3/4"
FRONT FACE
RUDDER DETAIL
2"
1"
1-1/4"X1-3/4"X 7" BLOCK
CEMENT 1/4"X 1/2" TO REMOVABLE ROOF FOR STIFFNESS, MAKE SNUG FIT WITH SIDES
3/8" SQ. HARDWOOD ENGINE BEARERS
1/4" ROOF
3/8" SHEET
1/4" SIDE
SECTION AT REAR CABIN FORMER
ROOF CORNER DETAIL
VENETIAN BLIND CORD CEMENT WELL
3/8" SHEET ROOF END
1/4" SHEET SIDES, ROOF & FORMERS
DESIGNED BY: FRANK EHLING
DRAWN BY: CAL SMITH
CUT OUT FOR PUSH-ROD
1/4"X 3/4"
1/8" SHEET SIDES, BOTTOM, & FORMERS

Susie is a real "square" so construction should take not more than an evening or two at most. You'll find the full-size working drawings helpful, though, if you're a novice builder. The boat was designed with the fellow in mind who's not too expert a modelplane fan. During initial test runs spectator interest was very high.

POLK'S FOR LATEST IN RADIO CONTROL

RADIO CONTROL UNIT, TUNED REED, 3 CHANNELS
Comprising transmitter, control box and receiver. Incorporating reed unit giving output for three separate channels. The channels can operate either escapement and/or electric motors. HARD Valves with a life of over 3,000 hours are used throughout. Complete with antenna. Postage & Ins. 25c **$115.00**

REED UNIT —Supplied in three different frequency ranges which, when combined, will give up to nine channels. Diagram of suitable transmitter and receiver also supplied to enable construction of own equipment. Weight 1½ ozs.

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SIGMA 4F 8000 OHM RELAY
Now available, new, factory set and guaranteed. Postage & Ins. 25c **$7.00**

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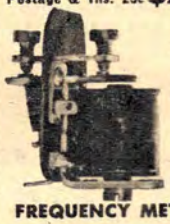
Polarized by high flux double magnet system and incorporates fully balanced leaf armature. Unaffected by vibration and capable of operating on current changes of under 1 m/a. Weight ⅞ oz. Postage & Ins. 25c **$7.50**



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This is a miniature lightweight relay with a knife edge balanced armature giving single pole two way operation. Size 1⅛ x 1 x 1. Wt. ¾ oz. P.P. & Ins. 25c **$6.50**

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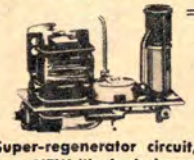
TRANSMITTER; ANTENNA; RECEIVER;
ESCAPEMENT; & O-3 MILLIAMMETER
Yes, you can now save over $7.00 on this combination deal. Nothing else to buy except batteries . . .
"Super Aerotrol" 27mc. Crystal Controlled
TRANSMITTER
—Operate and Maintain Yourself!
• Portable — Self contained — No separate antenna — No external Batteries! 3.5 lbs.
ASSEMBLED UNIT $27.95
With tube—less batteries
IN KIT FORM:
Kit includes all necessary parts (except tube and batteries): Precision Ground Crystal; Painted Metal Cabinet; Finished Sectional Antenna; stamped and formed chassis with all holes punched; all necessary components, resistors, condensors, coils and chokes; color coded wiring. Can be assembled in less than two hours. Complete building and operating instructions are included.
$19.95

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ASSEMBLED UNIT With tube-less batteries $21.95
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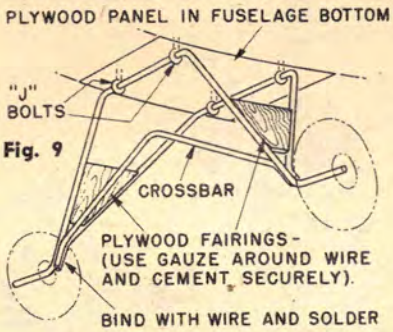
"AT" Data Dept: Macnabb on R/C

■ In the first part of this informative discussion Mr. Macnabb, internationally known R/C technician, covered fuselage design exclusive of the landing gear. . . .

A torsion bar arrangement for the front wheel used by Walt Good may be the solution to this problem. However, the two front wheel system has the advantage that the wheels can flex outwards in a bad landing without too much permanent bending. A two wheel landing gear, which will take practically any kind of a beating that you can give it, up to smashing the plane, is illustrated in Fig. 9. This landing


PLYWOOD PANEL IN FUSELAGE BOTTOM
"J" BOLTS
CROSSBAR
PLYWOOD FAIRINGS - (USE GAUZE AROUND WIRE AND CEMENT SECURELY).
BIND WITH WIRE AND SOLDER
Fig. 9

gear would be attached to a piece of plywood running underneath the area or box holding the radio receiver.

When attempting unassisted take-offs, the two front wheel landing gear seems just as good as the tricycle, because the tail immediately comes up and the plane takes off down a straight line, being controlled exclusively by the rudder movement, as the tail wheel is off the ground and is no longer effective.

In the tricycle landing gear, approximately the same thing happens because the front wheel has to come off the ground before the plane can be steered by the rudder. In using a tricycle landing gear, locate the two back wheels about the middle of the wing, just behind the C.G., so the front end comes up quickly. We favor the two front wheel landing gear instead of the tricycle gear for model airplanes.

In locating the dowels for the rubber band commonly used to hold on the wing, arrange the ones in front to point forward so the wing can slide off in a crash or bad landing. If both front and back dowels are crosswise, the wing may pull out the whole top center of the fuselage in a crash. A single center dowel, or one on each side as shown in Fig. 1 and Photograph 3 may be used, depending on whether the wing has a flat center section or the wing panels join each other.

Before leaving the subject of fuselages, one suggestion seeming to have merit, but on which not much work has been done, is flexible mounting of the motor. Even if the radio receiver is mounted sufficiently flexible so that the relay and parts do not vibrate, especially in high-powered models, which means big engines in comparison to the plane's size, vibration can affect the escapement or actuating means and these definitely cannot be rubber-mounted as the rudder itself absorbs a lot of vibration and would feed it back to the escapement or actuator.

It has also been found that in spite of rubber suspension of the radio, resonance of the tube elements and other parts can be picked up through the air by vibration of the fuselage sides, which affects the operation of the receiver. Therefore, it is suggested that consideration should be given to rubber mounting of the motor in order to cut down overall vibration of the plane. One kit on the market has this very helpful feature.

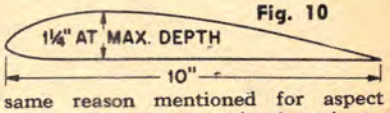
Wings

Gliders and free flight planes perform their required functions better with a high aspect ratio, but again in R/C planes this last bit of efficiency is unimportant. An aspect ratio of 5½ to 6 is adequate, a 5-foot wing may have a 10-inch chord, etc. Since R/C planes are expected to perform acrobatics and the strain on the wings is severe, the lower values of aspect ratio makes it easier to make a stronger wing.

However, a tapered wing, although subject to less bending stress, has much less counter-resistance to motor torque because lift toward the tip is diminished, with the result that motor offset mentioned above has to be very much increased to make the plane fly straight. On one model, with a tapered wing, this offset required was nearly 15 deg. Tapered wings are of course also more difficult to construct.

There is no reason to bother with undercamber on an R/C wing for the

Fig. 10



same reason mentioned for aspect ratios. A flat bottom wing is easier to build. Any good flat section seems to work and Fig. 10 is recommended. The camber factor of .125 is good for an average wing and may be reduced on a hot airplane.

Since strength is required in a wing for an R/C plane, two longitudinal struts in addition to the leading and trailing edges are a must.

Availability of tools may be the determining factor of the location of struts in the ribs. If a power band saw is available, it is easiest to stack up a bunch of balsa sheets, holding them together with pins pushed in from both top and bottom, and cut them all at once. While the sheets

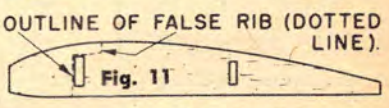


Fig. 11

are still held by the pins, holes may be drilled and filed rectangular to accept the struts. (Fig. 11.) It is only necessary to slide them on the struts and glue on the leading and trailing edges.

One disadvantage of this arrangement is that the wing panels have to be joined later and the dihedral built

DESIGN DETAILS and Structures

in at this time. It is a little tricky to get everything lined up. Also, with this type of construction, it is much easier to use false ribs between the main ribs to hold out the covering in the front. The main ribs should be 3" apart with the false ribs centered between them. Experience has shown that this false rib construction has

Fig. 12

plenty of strength and stands much abuse.

The other simplest construction is shown in Fig. 12 where the main strut is set in grooves from the top of the ribs and the secondary strut in grooves from the bottom. In this case, the secondary strut, which is flush with

Fig. 13

the bottom of the wing, may be assembled into the desired dihedral before adding the ribs as shown in Fig. 13. (In selecting these struts, sight down the narrow edge to see that this is straight. A curve visible sighting along the flat side disappears in assembly.)

Lay the secondary strut on edge on a table; push on the ribs; then push the primary strut from the top and add leading and trailing edge pieces. In joining the primary strut, use two pieces of ⅛" plywood cut to shape on each side of the struts and long enough to run to the second rib.

The simplest trailing edge is a V-shape that can be purchased preshaped. It is not necessary to set the ribs into grooves. When this trailing edge is used, and the rib construction of Fig. 12, the top of the rib curve in front of the primary strut should be cut away 1/32" to allow planking and still give a smooth continuous top curve. Ribs for the above construction should be at least ⅛" to 3/16".

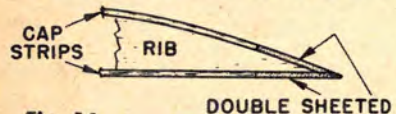
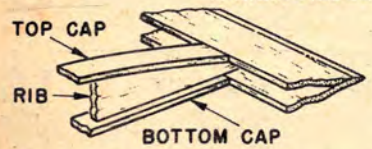


Fig. 14



The alternate trailing edge shown in Fig. 14 is finished the most easily by planking the front curve, top and bottom, up to the main strut and capping each rib for continuity of a smooth curve. With this construction ribs

Fig. 15

may be as thin as 1/16".

The trailing edge shown in Fig. 15 is definitely not recommended. Of several wings built with various trailing edges, two built this way have

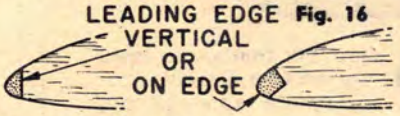


Fig. 16

both warped while none of others has.

The leading edge is the builder's choice in Fig. 16.

Wing tip washout to prevent tip stall in turns is considered essenital and is very easy to incorporate, and the method described actually improves the appearance of the wing. Cut the trailing edge about three ribs from the end, bevel it so that the wing tip is about 90% of the main chord. Mark the last two ribs and the tip (discussed later) where the front of the trailing edge intersects them and cut them off. Cut away the *bottom* of these

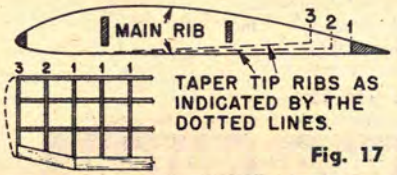


Fig. 17

ribs (Fig. 17) so they again match the thickness of the trailing edge. This automatically gives the required washout. Photograph 17A shows this washout, looking at the trailing edge.

Two wing tip designs are shown, either a solid block or a piece of sheet

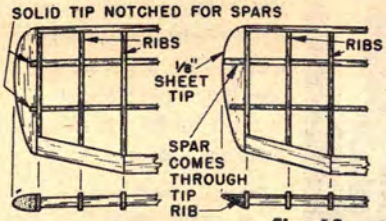


Fig. 18

as indicated in Fig. 18. The solid block gives a little more strength and probably looks better. Photograph 18A shows appearance of these two kinds of tips and also illustrates planking *vs.* false ribs.

The center of the wing, both top and bottom, should be planked.

(To be concluded)

—Vernon C. MacNabb

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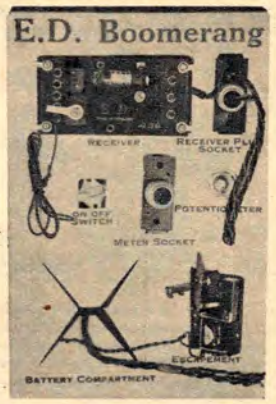

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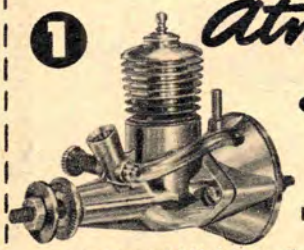

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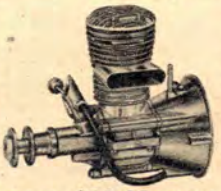

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Square Sue

(*Continued from page 82*)

"zero" with the escapement.

The cabin is built by cutting the sides to length and adding the front and rear formers. The "surplus" semi-circles form the roof of the cabin. Cut the rail pieces and cement them to the floor.

The celluloid ends are added—use a thick grade. The roof of the cabin can be made of sheets and a strip of wood stiffeners cemented to each inside to hold the roof in place. Tack-cement the roof in position and round off the edges.

The engine mount is made in the same manner as a U/C lower shell, then side sheets are added. The engine is held in place with bolts. Solder the nuts to tin stock and fasten to the bottom of the bearer. The engine housing is carved and cemented in place. Get this in straight or the boat will turn too easily one way and too hard the other.

Since model is made of balsa and may run against concrete embankments, it needs some protection. For this we use Venetian blind cord that has been soaked in clear dope. This is cemented around the edge in the front and along the top of the three inch side sheets. Cement the cord around the top edge of the roof and cut through where the removable roof ends. The same edging can be cemented around the base of the engine housing.

Mount the radio components as your equipment demands; however, the model should float at the same angle as indicated by the water line. If you use components of different weights position them to produce the desired floating attitude. Test the model at low speeds so you can familiarize yourself with the response. Be careful of the prop when launching the model. Don't nick yourself.

Bill of Materials

BALSA: 10 pcs. ¼"x3"x12". 16 pcs. ⅛"x3"x3". 2 pcs. ⅜"x3"x36". 2 pcs. 3"x3"x6". 3 pcs. ¼"x3"x36". 1 pc. ⅜"x3"x12". 6 pcs. ⅛"x3"x36". 1 pc. 3"x24". 1 pc. 1½"x2"x7". 1 pc. 3/8"x3"x12". 2 pcs. ¼"x¾"x36".

2 pcs. ⅜" sq. x 14" brass. 1 pc. 12"x1/16" wire. 1 pc. 6"x1/16" I.D. brass tubing. 1 wood nose button. 1 qt. clear dope. Half pt. pigmented coloring.

PI-27 Rcvr

(*Continued from page 79*)

dred yards from the transmitter. A plate current dip on signal to less than 0.1 ma. should be obtained. Radio checks between flights will pay off in dependability.

Selection of batteries to power the receiver depends on the model's weight-carrying capacity and on the amount of flying that is done. The "B" batteries shown are of the so-called hearing aid type and will give fairly long service. The "A" battery and escapement batteries are

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Yardney Silvercels. These are an extremely light, rechargeable type cell. (The filament battery should be under a pilot-light load for 1.5 hours before connecting to set.) The initial expense is much higher, of course, than for dry cells. However, if a good deal of flying is done, the investment is worthwhile. Naturally, the radio equipment will work equally well with either type of power.

Bill of Materials

(*Where the information is of help, the manufacturer and part number of an item are given immediately following the colon.*)

2 plugs, four prong, for receiver and relay: Amphenol, 86-CP-4S. 2 sockets, to mate with foregoing plugs: Amphenol, 78-S4S. 1 tube: Raytheon, RK-61. 1 coil form: Cambridge Thermionic, L-5 with red slug. 1 condenser, plate bypass 0.1 mfd, 150 volt (CZ): (smallest physical size obtainable). 1 condenser, antenna coupling 4-40 mfd ceramic (C4): Erie, Ceramic on Trimmer type TS2A or equal. 1 condenser, tuning, 4.7 mmfd ceramic (C-1). 1 condenser, grid leak, 100 mmfd ceramic (C-3). 1 resistor, grid leak, 3.9 megohm ¼ watt (R1). 1 potentiometer, 25,000 ohms (R2). 1 relay, 8000 ohm coil: Sigma 4F. 2 switches, S.P.S.T. 2 shock mounts, 8 lb.: Lord or equal.

#30 enamelled wire, #26 plastic covered wire, short piece of #20 wire; aluminum—1/16"x1½"x3⅞". Bakelite—1/16"x1½"x2½". 3 Yardney Silvercels.

Magic Maid

(*Continued from page 76*)

The original job was Nylon covered; this is not as hard to do as you may believe. Wet the Nylon and apply just as you would silk or Silkspan, using thinned cement for adhesive. Doping the frame beforehand will help. Permit a little material to overhang. When a section is covered, check to see if you pulled the wing out of line. If so, loosen the covering and re-cement.

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The first coat of dope must be applied carefully to prevent the adhesive from oozing through the Nylon and running along inside the frame. Additional coats can be applied in the usual manner. Set the frame up in a jig for warp-free drying.

If your radio experience is light, get a "Ham" or some R/C enthusiast to check your equipment out first since you want to test-fly with radio control after all glide testing is completed.

Load the model with a weight to simulate the batteries and radio equipment and glide it from level ground. Find a gentle slope where you can assure yourself that the *Maid* is gliding—not stalling—and is gliding straight. If your surfaces are true, your model should glide straight ahead. Then, after your glide is good, install the radio gear and check to see that the C.G. is about 27% of chord from the leading edge.

When the radio gear is operating correctly, start the engine and have it launched by your assistant running along and permitting the model fly out of his hand. It should not climb like a contest free flight; rather it will fly out in a shallow climb. Use various prop blade areas and pitches to find out what is best suited to your engine. The Tornado 9/4 was good with the Mills .08.

A lot can be said about R/C flying, but when you fly remember to send short pulses and see what happens; then you can determine how long you can hold the "on" signal and how you can "beep" the model out of a turn into a straight-away without having it zoom into a stall. Remember that a stall can be cured by a turn. And a dive can be helped by flying straight. Let an experienced radio-model man fly the model first and he can advise you of any peculiarities it may have.

R/C Truck

(*Continued from page* 80)

one chassis to fit both the truck and the auto follow the outline shown.

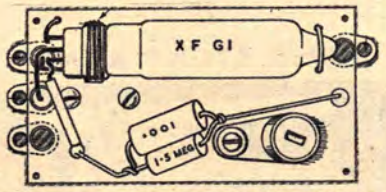
The complete instructions will be found on the full-size plans available from Hobby Helpers.

Chassis Parts List

One piece 3/8" plywood, 19" x 8". One E.D. "Boomerang" outfit with gas tube receiver (Polk's). Two pairs Veco 3½" wheels (Polk's). On heavy duty "O" gauge train motor (Polk's). One small plastic battery motor (Wilson make). One "HO" engine worm and gear set 48-1 (Polk's). One Willard NT-6, 6 V. miniature storage battery (Polk's).

Additional gears for steering system (see text). Contact strips for all switches (see text). One SPST toggle switch. One 10 ohm 10 watt wirewound adjustable resistor.

"MIDGET 1" RADIO



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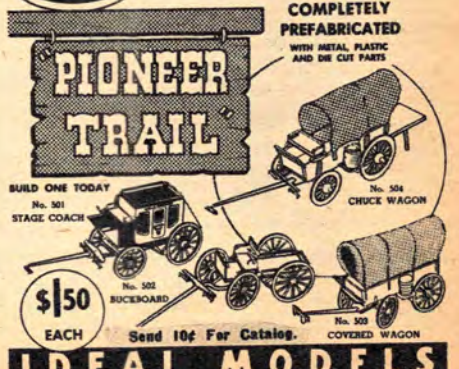

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R/C Roundup

(*Continued from page 75*)

large size 45 V. B batts., for a total of 180 V. Price, complete with everything you need, except batteries, is $29.50. Hard Tube Receiver uses 1S4 tube and a G.E. relay, sells for $19.95. Triple-use Field Strength Meter is built around a 3 ma. meter; switching arrangement allows same meter to be attached to receiver for tuning up, and to be used as a 0-30 ma. meter for transmitter tuning. Costs $14.95. All these units are sold with a 90-day guarantee.

A high quality small battery motor is now available from Thompson Model Supplies, Box 372, Guthrie, Okla. Intended for continuous operation on 3 to 6 V. (a 12 V model is also made) the unit is 1" dia., and about 1⅝" long. Shaft is 1/16" dia., and the motor sells for $4.95. It weighs 1.2 oz. Same concern has a 250-1 gear box weighing ¼ oz., same price. They also install a throttle on model gas engines for $9.95; price includes actual installation—you send them your engine. Uses single needle valve and is said to provide any speed from idle to full throttle by moving small lever.

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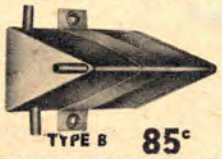

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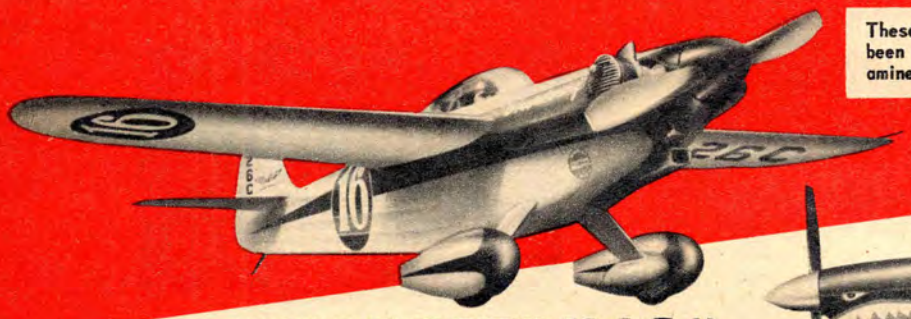

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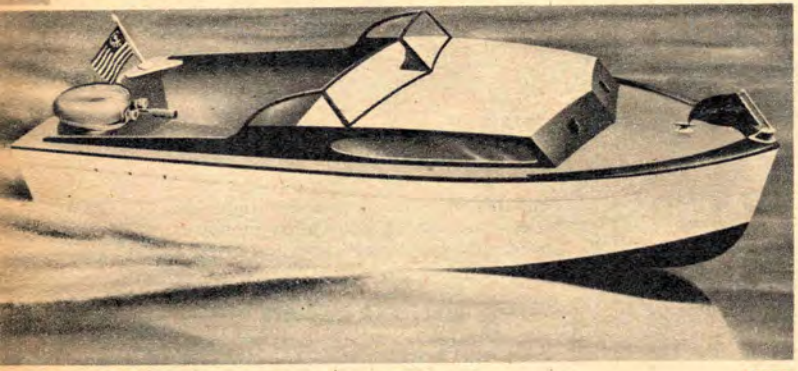

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Slotted flaps may be depressed 10° for free-flight; depressed 25° for slow speed radio control flying; or raised 5° for high speed radio control flight.

Here is the model designed to use radio control devices that will be available in the next few years. The Helioplane is the first model that permits the use of the scale flaps giving true two-speed flight.

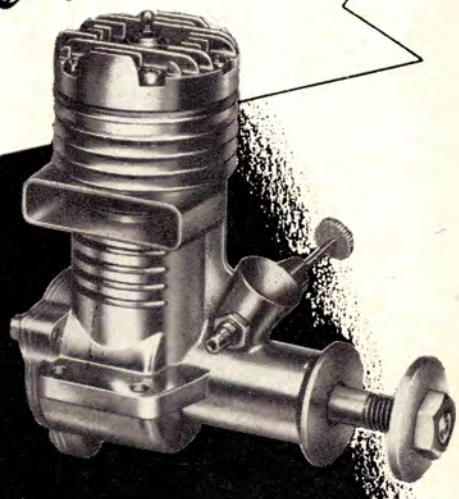
buy BERKELEY at your local dealer!

If no local dealer is convenient, mail orders will be filled by Berkeley Model Supplies, Dept. AT., West Hempstead, N. Y. Please include 25¢ packing & postage.

FOX 35 *Nationals Winner!*

1949
1950
1951
1952

Proven the World's Finest stunt motor!



Flown by the world's outstanding modelers:

BOB PALMER	GEORGE ALDRICH
LOU ANDREWS	HAROLD REINHARDT
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Features:

- EASY STARTING
- STEADY RUNNING
- POWERFUL
- LIGHT WEIGHT
- DURABLE

Facts about the 35:

1. Rated by the British Aeromodler Magazine at 5/8 H.P.
2. Every FOX motor is thoroughly test-run before shipping.
3. Years of constant development of original basic design has insured the elimination of all "bugs."
4. FOX motors are designed and built by MODEL BUILDERS.

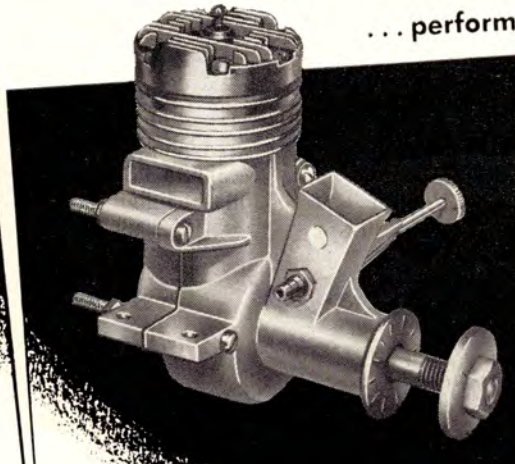
$14.95

and Introducing the . . .

FOX 19

the World's Finest!

. . . performancewise . . . designwise!



We proudly introduce our NEW Fox 19, incorporating ALL the features we have found to be most desirable during many years of model flying.

The 19 is easy starting, dependable, light weight and structurally-sound. It mounts easily into nearly all types of installations. However, most important, it has that indefinable, elusive feel for flying . . . that eager want-to-go spirit that makes model flying an adventure! We invite you to experience a NEW HIGH in motor performance.

FLY A FOX 19!

$13.95

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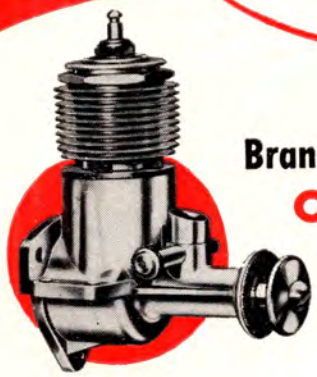
...Bears Down on Price!
...Ups Power and Performance!



Brand New Class A Displacement!

OK CUB .14

Requested by leading plane designers. Light — only 2¾ oz. Souped-up power — 3,000 to 15,000 RPM. For free flight, U-control and R/C flying.

$8.95

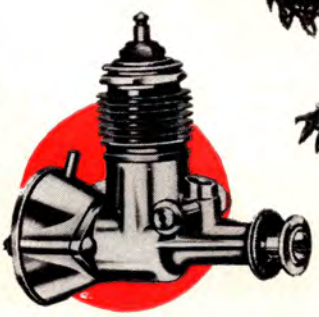
Top Performer in ½A Class!

OK CUB .049X

Combination Package

Companion to the famous .049 Cub. Shorter stroke and larger bore deliver higher output. Package includes assembled engine, matched prop, extra rear cover, fuel tank, neoprene tubing.

$6.25 Complete



Complete Power Plants at Low, Low Prices!

OK CUB Combination Packages

Get an OK Cub Combination Package in any of 4 displacements and enjoy the best in value, power and performance. Each package contains assembled engine, prop and fuel tank.

CUB .039 . . . $4.95	CUB .074 . . . $6.75
CUB .049 . . . 5.75	CUB .099 . . . 7.75

OK .049 Power Kit

A $6.15 value — assemble it yourself and save $1.20!

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Outstanding ½-A

Beginner's choice — rugged — easy to start.

OK .049 CUB $5.25

Unmatched

for stunt and speed flying.

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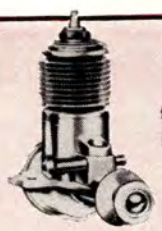

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For Championship Performance!

OK GLOW FUEL

Ideal for breaking in glow plug engines. Methanol base heavily fortified with nitrates. Won't corrode, gum or varnish. Gives easier starting, smoother operation, higher speeds. For all OK's and engines of similar compression ratios.

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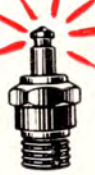

Quicker Starting, Faster Accelerating!

OK GLOW PLUGS

Long-lasting platinum glow element assures easy starting, higher speeds. ¼-32 longs and shorts for all engines.

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